

EMS Medical Director Curriculum Pre Test

1. The Medical Director is responsible for the education of the EMS personnel?
True / False
2. EMS is a division of;
 - a. EMS- C
 - b. NTSA
 - c. DOT
 - d. NHTSA
 - e. HRSA
3. Average response time for ALS responders:
 - a. 10 minutes or less
 - b. 8 minutes or less
 - c. 5 minutes or less
 - d. none of the above
4. T or F; Medicare has a billing code for On-Line Medical control?
5. Physician with full medical oversight authority and responsibility for the EMS system operation
 - a. On — Line (Direct) Medical Director
 - b. On scene Physician Intervenor
 - c. Off—Line (Indirect) Medical Director
 - d. none of the above
6. Components of Quality management involving scene time, mortality review , trauma and cardiac arrest survival are components of
 - a. process and outcome measures
 - b. evaluation methods
7. The right to obtain blood from a patient after an infectious disease exposure is;
 - a. Emergency Medical Services System Act
 - b. Ryan White Act
 - c. The Highway Safety Act
 - d. JCAHO

8. Structured response to event defining lines of authority and responsibility are:
 - a. Incident Command/Management System
 - b. Federal Emergency Management Agency (FEMA)
 - c. National Disaster Medical System (NDMS)
 - d. Disaster Medical Assistance Team (DMAT)
9. An event that overwhelms the ability of the local emergency response system
 - a. MCI — Mass Casualty Incident
 - b. Disaster
 - c. catastrophe
 - d. none of the above
10. True/False: Since obtaining consent may be troublesome, EMS researchers may seek a waiver of consent so that consent is not necessary for each research subject.

INTRODUCTION

Written by Sandra Archibald

Edited by Ashlee Melendez

OBJECTIVE: Understanding of the issues and complexities involved in providing proficient medical oversight and leadership in EMS systems.

Upon completion of this course, the participant should be able to:

1. Define the role of the medical director
2. Cite resources available for the medical director.
3. Cite the basic core knowledge that a medical director should possess to function effectively in an EMS system.

OVERVIEW:

In this course, we will mirror the modules in the NHTSA “Guide for Preparing Medical Directors” to provide continuity in addition to using the Principles in EMS Systems text for reading and reference.

The face of EMS has undergone major transitions over the last twenty five years. Origins of EMS have been referenced to biblical times with the acts of the Good Samaritan and the first documented “mouth to mouth” by Elijah in resuscitating the widow’s son in Kings I.

Rudimentary EMS roots in the premodern era are grounded in the battlefields, when early combat medics were soldiers who risked their life to care for their comrades.

In the Kentucky/Ohio area, the beginnings of modern EMS and Emergency Medicine were developed. In 1865, the first hospital based ambulance service was established at Cincinnati General Hospital. In 1970, the first Emergency residency program was established at the University of Cincinnati. Shortly thereafter, in 1971, the first two academic programs in Emergency Medicine were founded at the University of Southern California and the University of Louisville.

OVERVIEW OF EMS:

As stated in the NHTSA curriculum, “EMS is the provision of health care outside of the hospital setting by personnel with varying levels of training” It provides a coordinated system of care that starts the moment the call is received at dispatch until the patient arrives at a definitive care facility, extending into rehabilitation. This concept is emphasized in the EMS Agenda for the Future document.

1. Paramedic and ALS prehospital providers are physician surrogates or extenders, which function under the supervision of a physician.
2. Prehospital care is considered by law, the practice of medicine, with the establishment of the doctor-patient relationship when the ALS provider responds to the call.
3. As stated in the NHTSA curriculum, “EMS is an interdisciplinary health care activity”
 - It involves a team approach – with the medical director as the team leader.
 - The medical director should set the tone and direction of the system.

The medical director should possess a unique set of skills and knowledge in regard to prehospital care.

EMS MEDICAL DIRECTOR:

The medical director wears many hats, requiring a working knowledge of the components of an EMS system.

As stated in Principles of EMS Systems Foreword;

“The American College of Emergency Physicians believes that prehospital care is an integral part of emergency medicine and that the emergency physician should be directly involved in the education and direction of EMS personnel and the continuous quality improvement process within EMS systems. All emergency physicians should have sound knowledge of the function and operation of the EMS system and clear understanding of the important issues involved in bringing medical accountability to medical care provided by nonphysicians. Improved patient care will result when well-qualified, actively involved physicians develop the EMS system standards for medical interventions and are responsible for maintaining quality assurance.”

While EMS directors may hail from a variety of clinical backgrounds, they should all provide a commonality of service.

The EMS director should:

1. As stated in the NHTSA curriculum, the major responsibility is to provide an ADVOCACY ROLE, “for the patient, the EMS system and providers, the hospital and the community.” You are the liaison between the EMS system and the medical community.
2. Possess exposure and expertise in the delivery of EMS care and the EMS system administration, including a working knowledge of the design and operation of an EMS System.
3. Provide a leadership role. Physicians are teachers, and provide a resource of knowledge and experience in delivering of care of the acutely ill or injured.
4. Be familiar with mass casualty plans.

5. Possess a working knowledge of laws and regulation that affect local, regional and state EMS operations
6. Be actively involved in QI of personnel and the system. This process provides tools to be used as a standard for critiquing and retraining if necessary, to maintain a competent service that provides the best care for its citizens.
7. Be involved in the education, training and recertification of EMS personnel. This should include implementation and revision of protocols in all prehospital avenues, including extrication triage, transportation and transfer.
8. Be familiar with the dispatch and communications functions in the EMS system.

As stated in the NHTSA curriculum; “EMS medical oversight is an interdisciplinary function. You will be working closely and cooperatively with administrative directors of the organizations within the EMS system.”

A lecture given by Dr Brian Zachariah best summarizes the qualities for a successful medical director. He states that to be a successful medical director one should;

- Be familiar with protocols.
- Be familiar with the provider’s level of training and available equipment.
- Be familiar with standard practices, beliefs and policies. (written and unwritten)
- Be clear and concise when giving orders.
- Always explain (briefly) when denying requested orders.
- Don’t experiment with the medics or the patients
- Help the medics.

This document is a work in progress. We hope that it provides a helpful resource and learning tool. Our goal is to provide improved health care, starting in the prehospital arena.

Dan O’Brien MD FACEP
Sandi Archibald MD FACEP
Ashlee Melendez, RN, BSN, CCRC
Robert Pringle MD

The History of EMS

Written by Ashlee Melendez
Edited by Sandra Archibald
Daniel O'Brien

From the American College of Emergency Physicians (ACEP) Principles of EMS Systems

From the earliest times, people have required a means of transporting their wounded and sick. The first wounded were probably carried in a hammock strung between two poles. Other unique conveyances included human dhooleys, which were used in India; wicker cradles called mule panners; and Egyptian camel litters. The Mojave Indians devised a litter comprised of a sheet of canvas between two poles carried on the shoulders of two men.

A more formalized ambulance surfaced in the late 15th century, when Ferdinand and Isabella of Spain took an unprecedented interest in the welfare of their troops during their crusade against the Moors. Surgical and medical supplies were brought together in special tents for the wounded called ambulancias.

A man named Dominique—Jean Larrey developed the concept of the ambulance further after being appalled by the neglected wounded and poor medical conditions he had witnessed during France's war with the Austrians and Prussians in 1792. Larrey came up with the idea of mobile ambulances—light weight, two wheeled vehicles which stayed with the troops and allowed surgeons to work on the battlefield, an idea he later refined for Napoleon during the General's Italian campaign.

The evolution of the ambulance took yet another turn during the American Civil War when ambulances were too few, often late, and driven by civilian drunkards and thieves. A physician named Jonathan Letterman reorganized the field of medical service to provide an effective ambulance service for the evacuation of battle casualties.

In 1864, an act was passed in Congress entitled "An Act to Establish a Uniform System of Ambulances in the Armies of the United States," which spelled out who was responsible for each phase of the ambulance system.

During the 1864 Convention in Geneva, an agreement was made by several European countries to recognize the neutrality of hospitals, of the sick and wounded, of all persons connected with relief service, and the adoption of a protective sign or badge. In America, a similar organization had been functioning during the Civil War. The Sanitary Commission, which 20 years later became the

American Red Cross, was brought into being a large part due to the efforts of Clara Barton.

Most Ambulance innovations took place during wartime, which were then adapted to civilian life. American hospitals initiated their own ambulance services during the late 1860's. Horse drawn, these ambulances has a moveable floor that can be drawn out to receive the patient. Beneath the drivers seat was a container with: a quart of brandy, two tourniquets, six bandages, six small sponges, splint material, blankets and a two-ounce vial of persulphate of iron.

With the arrival of the automobile came a different type of ambulance, the first appearing in 1899. During World War I, many ambulances were adapted from buses to taxis. The world's oldest builder of ambulances is the Hess and Eisenhardt Company in Cincinnati, Ohio. In 1937 they sold the first air-conditioned ambulance built in America. Developed with the idea that the ambulance should be a pre-hospital emergency room, these pre-cursors of the modern ambulance were filled with medicine cabinets, roof lights and two way radios.

During 1966, the National Academy of Sciences "White Paper" entitled "Accidental Death and Disability: The Neglected Disease of Modern Society", identified deficiencies in providing emergency medical care in the country. This paper was the catalyst prompting federal leadership toward an organized approach to EMS and trauma care. The authority of states to set standards, regulate EMS, and implement programs designed to reduce injury was further reinforced and encouraged by the enactment of the 1966 Highway Safety Act. Various subsequent federal and state initiatives were responsible for improving and refining prehospital systems of care during the two decades, which follow the landmark 1966 paper.

Those who served on ambulances prior to 1970 viewed our role primarily as that of providing rapid transportation to the nearest hospital. If they were trained at all, it was only to provided basic first aid; they were discouraged from doing anything more. Meanwhile, on the battlefields of Vietnam, and Korea, military doctors, nurses, and paramedics used helicopters and prompt, aggressive surgery to save the lives of mortally injured soldiers. According to some authorities, soldiers wounded by enemy fire in Vietnam had a better chance of survival than the victim of a motor vehicle collision back home in the US.

Pantridge and others were demonstrating in Northern Ireland that prehospital care of victims of acute myocardial infarction could reduce mortality. Dr. Pantridge is credited with developing the first mobile cardiac care unit. Thus, the major impetus for the origins in EMS were based on the impact prehospital care could provide in trauma and cardiac arrest.

In 1971, the paramedic's service that was being implemented by the County of Los Angeles caught the attention of television producer Jack Weber, and the popular TV series "Emergency" was born.

Congress enacted the Emergency Medical Services System Act of 1973, which authorized and funded the Department of Health, Education, and Welfare to designate more than 300 regional "EMS systems" throughout the country.

The Department of Transportation participated by funding the development of training curricula for the emergency medical technician, EMT-Paramedic, and the first responder. The DOT also providing matching funds for EMS training programs, communications equipment, and ambulances. The Federal Communications Commission developed new rules for EMS radio communications.

In the 1970's the role of the EMS medical director evolved into variety of styles and practices depending on local history, resources and circumstances. In some communities the EMS medical director became the focal point of the advanced life support delivery system.

In 1980, the National Research Council formed a Subcommittee on Medical Control and assembled experts from throughout the nation who studied the topic extensively. Their findings were published in the book, Medical Control in Emergency Medical Services System. It was the first work of its kind and presented many viewpoints, including the distinctions between "off-line" and "on-line" medical control.

In 1981, after eight frantic years of setting standards, developing programs, and funding competition, the federal EMS initiative through the Emergency Medical Service Systems Act was discontinued.

National Highway Traffic Safety Act of 1966, the Department of Transportation played a significant role by establishing an EMS branch in the National Highway Traffic Safety Administration.

During the eight years of DHEW's (Department of Health, Education, and Welfare) initiative, rivalry with DOT (Department of Transportation) and NHTSA (National Highway Transportation Safety Administration) was minimized by agreements outlining the respective agencies activities. Thus, NHTSA concentrated mostly on the issues of personnel training, radio communications, and ambulance vehicles

Largely inspired by the policies and funding support of the EMS branch of NHTSA, the American Society for Testing and Materials, a private, nonprofit consensus standards organization, was selected in 1984 as the forum for an ongoing process for developing a wide variety of EMS-related standards. This action was in keeping with federal Office of Management and Budget directive to

reduce or eliminate the federal role in setting standards. The ASTM "F-30" Committee on Emergency Medical Services is divided into six subcommittees and further divided into task groups to deal with specific topics.

Since the early 1980s, various organizations, clinicians, and educators have identified shortcomings in training programs and curricula for emergency medical personnel. This resulted in creation of specialized training and texts. The first such course was the Advanced Cardiac Life Support (ACLS) course and certification by the American Heart Association. This was followed by programs and texts dealing with Basic Trauma Life Support (BTLS, developed by Alabama ACEP); Advanced Trauma Life Support (ATLS, American College of Surgeons); Prehospital Trauma Life Support (PHTLS National Association of EMT's), Pediatric Advanced Life Support (PALS, American Academy of Pediatrics and American Heart Association); and Advanced Pediatric Life Support (APLS, ACEP and the American Academy of Pediatrics). Addressing the need recognized in the creation of these specialized training programs and texts, an NHTSA sponsored process was launched in 1989 to update the National Standard Curriculum for the Basic Emergency Medical Technician.

Concerned with gaps and overlaps among the various training programs and the level of knowledge and skills required by each of those programs, a National EMS Training Blueprint Task Force began in 1992 to design a national blueprint for EMS training and education. Earlier, concern about varying standards for the training of EMT Paramedics led to an accreditation process for training programs. By 1993, this process, administered by the Committee on Allied Health Education and Accreditation of the American Medical Association and the Joint Review Committee on Education for the EMT Paramedic, has accredited 82 paramedic-training programs in 26 states.

Throughout the modern era of EMS, there has been little scientifically defensible data to prove the efficacy of a particular system designs or prehospital interventions. Even where individual systems collected data and evaluated patient outcomes, the studies generally have been limited to percentages of patients surviving out of hospital episodes of cardiorespiratory arrest. However, due to inconsistent research parameters and study designs, it was impossible to make meaningful comparisons among systems.

A historical perspective can serve us at this troubling time. First, we should remember that the first organized methods of care and transportation of the sick and injured were devised in times of war. Somehow, despite the ugliness and barbarism that surrounded them, our predecessors were driven by a desire to better care for their patients. We should be inspired by that example in these times.

Second, we should recall that history is full of pendulum effects. The optimistic among us try to see the current wave of violence, abuse, and irresponsibility as an extreme of the social pendulum. We look for it to return to equilibrium.

History of EMS Questions

1. EMS providers function under the licensure of the medical director.
True or False
2. A medical director has:
 - a. Primary responsibility for all aspects of EMS
 - b. Medical oversight for patient care
 - c. Responsible for entire EMS system
 - d. Responsible for educational program
 - e. All of the above
 - f. None of the above
3. Cardiac arrest and major highway trauma were the major impetus for the roots of
Prehospital care? True or False
4. The first significant publication addressing deficiencies in emergency care in the civilian community was;
 - a. "Medical Control in Emergency Medical Services Systems."
 - b. "Recommended Guidelines for Uniform Reporting of Data from Out of Hospital Cardiac Arrest: The Unstein Style."
 - c. "Accidental Death and Disability: The Neglected Disease of Modern Society"
 - d. "Injury in America, A Continuing Public Health Problem"
 - e. None of the above
5. In the 1960's, Dr Pantridge developed the first mobile cardiac care unit in
 - a. Portland, Oregon
 - b. Cincinnati, Ohio
 - c. Los Angeles, California
 - d. Belfast, Ireland
 - e. Miami, Florida
6. EMS is a division of;
 - a. EMS- C
 - b. NTSA
 - c. DOT
 - d. NHTSA
 - e. HRSA

7. The paper that describes the first 20 years of EMS and was a follow up to the "White Paper" was;
- a. " Medical Control in Emergency Medical Services Systems"
 - b. "Recommended Guidelines for Uniform Reporting of Data from Out of Hospital Cardiac Arrest: The Utstein Style."
 - c. " Accidental Death and Disability: The Neglected Disease of Modern Society"
 - d. "Injury in America, A Continuing Public Health Problem"
 - e. None of the above`

History of EMS Answers

- 1 EMS providers function under the licensure of the medical director.
True or False

Answer: False
NHTSA; p.8.I.B.2

- 2 A medical director has:
- a. Primary responsibility for all aspects of EMS
 - b. Medical oversight for patient care
 - c. Responsible for entire EMS system
 - d. Responsible for educational program
 - e. All of the above
 - f. None of the above

Answer: E. All of the above
NHTSA; p.9.II.B

- 3 Cardiac arrest and major highway trauma were the major impetus for the roots of
Prehospital care? True or False

Answer: True
NHTSA; p.9.II.B.1

- 4 The first significant publication addressing emergency care in the civilian community was;
- a. "Medical Control in Emergency Medical Services Systems."
 - b. "Recommended Guidelines for Uniform Reporting of Data from Out of Hospital Cardiac Arrest: The Unstein Style."
 - c. "Accidental Death and Disability: The Neglected Disease of Modern Society"
 - d. "Injury in America, A Continuing Public Health Problem"
 - e. None of the above

Answer: C. "Accidental Death and Disability: The Neglected Disease of Modern Society"
NHTSA; p.9.II.B.2

- 5 In the 1960's, Dr Pantridge developed the first mobile cardiac care unit in
- a. Portland, Oregon
 - b. Cincinnati, Ohio
 - c. Los Angeles, California
 - d. Belfast, Ireland
 - e. Miami, Florida

Answer: D. Belfast, Ireland
NHTSA; p.9.II.B

- 6 EMS is a division of;
- a. EMS- C
 - b. NTSA
 - c. DOT
 - d. NHTSA
 - e. HRSA

Answer: NHTSA; p.10.II.E.

- 7 The paper that describes the first 20 years of EMS and was a follow up to the
"White Paper" was;
- a. " Medical Control in Emergency Medical Services Systems"
 - b. "Recommended Guidelines for Uniform Reporting of Data from Out of Hospital Cardiac Arrest: The Utstein Style."
 - c. " Accidental Death and Disability: The Neglected Disease of Modern Society"
 - d. "Injury in America, A Continuing Public Health Problem"
 - e. None of the above

Answer: D. "Injury in America, A Continuing Public Health Problem"
NHTSA; p.10.II.B.4

EMS SYSTEMS

Written by Sandra Archibald

Edited by Jeff Violette

As many great ideas, conception to practice can be arduous journey. The concept of forming an EMS system requires forethought and planning in the organization and implementation of the system.

EMS system development must meet the needs of a community, whether it is in a rural or metropolitan setting, while factoring in the contracts of preexisting provider services.

“It is of paramount importance that organizers of an EMS system have the authority to oversee funding, contract negotiations, and enabling legislation.”¹

This chapter focuses on the components needed for an EMS agency from the inception, communication, and regionalization to specialization service and funding. A medical director must have a working knowledge to provide guidance in the development of an EMS system to provide the best patient care for its recipients.

EMS AGENCY FUNDAMENTALS

Administrative or Governing Board

An administrative entity needs to be in place to coordinate the components and standards for an EMS agency to function effectively.

“The agency should be headed by a board or council made up of a representative cross-section of the medical, prehospital provider, and consumer population of the service area. The board must have authority to establish policies for the system and must be the final authority in all disputes. Representation on the board should be broad enough to ensure that policies developed will be in the best interest of patient care without undue concern over political or monetary issues.”²

In the state of Kentucky, this administrative board is KBEMS.

On a local level, there are different councils that review local policies and daily administrative issues.

Components of EMS system

In 1973, the Emergency Medical Services System Act outlined 15 components of an EMS system that had to be addressed in order for a system to receive funding. These 15 components are:

- Manpower
- Training
- Communications
- Transportation

- Emergency facilities
- Critical care units
- Public safety agencies
- Consumer participation
- Access to care
- Patient transfer
- Standardized record keeping
- Public information and education
- System review and evaluation
- Disaster planning
- Mutual aid³

Unfortunately, medical direction was initially left out of the initial standards.

In this era, NHTSA Technical Assistance Program is the governing entity that outlines critical components that are needed for an EMS system.

- Regulation and Policy
- Resource Management
- Human Resources and Training
- Transportation
- Facilities
- Communications
- Public Information and Education
- Medical Direction
- Trauma Systems
- Evaluation⁴

- In addition
- Finance
- Audit and Quality Assurance
- Mutual Aid
- Disaster Planning

The NHTSA Assistance Team permits states to utilize highway safety funds to support the technical evaluation of existing and proposed EMS systems.

Medical accountability and direction is an integral portion of this program. Medical direction is imperative for growth of EMS systems.

The DOT initially had bargaining power over EMS agencies in the 1970's. This control diminished when the funding dissipated in the 1980's.

The DOT remains involved in public education and contributes to the updating of EMS standards. Other governmental agencies that interact with EMS systems in a regulatory manner are: OSHA with the laws that deal with safety regulations such as infection disease control and immunizations of health care workers and the Health Care Financing Administration (HCFA) in the legalities of Medicare reimbursement of prehospital care and transportation.

“The Americans with Disabilities Act effects EMS in the area of personnel discrimination and the construction or remodeling of EMS administrative and substation facilities. EMS organizations must ensure that employees that are handicapped, but who can perform required work duties are not discriminated against in the hiring process.” ⁵

SYSTEM DESIGN

A medical director should understand the different types of organizations that provide EMS services. The American Ambulance Association has a publication that deals with contracting of Emergency and non-emergency ambulance services.

The response system may be

Single-tiered = the personnel and vehicles provide care and transport to appropriate facilities.

Multi-tiered = the personnel and vehicle and vehicles may vary in the capacity to treat ACLS.

Organizations that render emergency care and transport are of many forms as listed below:

1. BLS Service: The responding agency and transporting agency provides BLS services only. This may be fire, volunteer or private service. There are still some rural areas that do not have ALS services.
2. ALS Services:
 - a. Fire Based EMS Model: The fire department provides all EMS services
Personnel are cross-trained as firefighters and paramedics and can function in either capacity while on duty.
 - b. Third Service Model: EMS is based in a specially designated municipal department, which is separate from Fire and Police Departments. It provides all the ALS and BLS services. The city owns, operates and staffs all of the ambulances. This is the type of service that was seen in Jefferson County EMS in Louisville and is the type of service the merged government is forming in the Metro Louisville Area. This service can be housed in public health department or the public safety

department. In Boston it is part of the health department and in Pittsburgh, it is part of the Public Safety Department.

- c. Public Utility Model – The community contracts with a private ambulance service for its ALS and BLS services. Example is Kansas City, Missouri.
- d. Public/Private Partnership Model - Public service such as the fire department or Law enforcement provides the initial response, a private ambulance provides transportation. Examples are Oklahoma City, Tulsa, Las Vegas, Fort Worth and San Mateo County California.
- e. Volunteer Model – Primarily seen in rural areas where funding is not provided for EMS services.
- f. Private, for profit companies
- g. Hospital Based – ambulance and services provided at the local hospital, based in the ER.

RESPONSE SYSTEMS

- 1. Single-tier system: All ambulances are capable of ALS.
Seen primarily in urban areas
- 2. Multi-tiered system: There is a mixture of ALS and BLS.
The nature of the call and available resources determine what is dispatched first.
 - a. BLS first response – ALS transport
 - b. ALS response and transport
 - c. Police or fire first response – private ambulance transport with either ALS or BLS capabilities
 - d. Industrial first response with ALS or BLS transport
 - e. Specialty/Critical Care transport – example is Kosair Children's Baby Buggy
 - f. Rotor or fixed- wing air ambulances – such as Stat Care or Life Flight in Kentucky to name a few of the providers.
 - g. ALS intercept vehicle to support BLS transport

VEHICLE DEPLOYMENT:

The goal is to provide service for BLS within four minutes and ALS within 6 – 8 minutes.

- 1. Fixed Deployment – vehicles are in a fixed location, such as a firehouse, and respond from that location
- 2. Fluid Deployment or Guided SSM (System Status Management):
Vehicles are placed in different areas in the response area.

A computer program can predict statistically where the most likely location and time of the next run will be. This is based on reviews of response call volumes over time.

The positions may be parking lots, buildings or public areas such as fire departments or other government entities.

RESPONSE TIMES

There is no “universally accepted” response time, but the literature and texts on EMS supports a BLS response time of 4 min and ALS response time of 6-8 minutes for potentially life threatening events. When the event is considered non-life threatening, the times are equal to or less than 12 – 15 minutes. This is the ideal, and based on the urban model. Rural areas have longer response times secondary to the geographical constraints.

“These numbers are based on cardiac arrest a study in Seattle in 1970’s, looking at cardiac arrest survival and early defibrillation.”^{6 7} and⁸

“Fractile response times are generally the times that are used. This is the percentage of time that response times meet guidelines.”⁹ This response time is expected to be achieved 90% of the time.

Time definitions:¹⁰

1. Access interval: time from event recognition to access of EMS
2. Dispatch interval: time from access to dispatch of resources
3. Activation interval: time from dispatch to resources enroute
4. Response interval: time from enroute to arrival at scene
5. Patient access interval: time from arrival at scene to arrival at patient (first direct contact with patient)
6. On-scene interval: time at scene to depart for hospital
7. Transport interval: time from depart scene to arrival at hospital
8. In-Service interval: time from arrival at hospital until unit is back in service available for response.

“Unit Hours: Is one hour of time in which a fully staffed ambulance or rescue unit is in service or standby.”¹¹ This measure of unit is determined by call volume and response time in order to utilize appropriate staffing patterns.

This is a critical concept, because financial management is based on Unit Hours or the total system cost per hour and hour utilization ration (U: UH ratio)” “This is the industry’s standard and is calculated by dividing the total number of patient transports during any accounting period by the total number of unit hours produced in that same accounting period. The higher the U: UH ratio, the lower the cost per patient served.”¹²

COMMUNICATION AND DISPATCH

Access to an emergency response service is a critical service. In the US this is usually accomplished by a local 911 system. Each system is localized or regionalized; therefore one cannot call from another state and be connected to a 911 service in a service area that they are not in.

In England, this number is 999 and they have the ability to call back a phone if it is wireless.

“At the end of the 20th century, nearly 93% of the population of the United States was covered by some type of 9-1-1 system. Ninety-five percent of that coverage was enhanced 9-1-1.”¹³

1. Basic 911: In order to decrease morbidity and mortality, it is crucial that the public have easy access to EMS, fire, and police. “Twenty five percent of the US is served by agencies that can be accessed by dialing 911; the remaining regions require use of a seven-digit telephone number.”^{14, 15}
2. Enhanced 911: It is a computerized system that automatically displays the address and telephone number to the dispatch. This allows services to be dispatched to the caller regardless if they are able to speak. “E911 requires a commitment by the telephone company to keep information up-to-date when people move or change telephone numbers.”¹⁶
3. Seven or ten digit numbers are used in certain areas where there are no 911 services. There is usually separate numbers for fire, EMS and police and they are usually located at the front of the phone directory.
4. Call boxes: Highway call boxes can be utilized for emergency services. “Call boxes can be linked to a central communications center by land line or radio repeater system.”¹⁷
5. Other methods used are CB radios (Channel 9), GPS systems in vehicles such as On Star and wireless 911.

Terms associated with systems:

PSAP – Public Safety Answering Point)

ANI – Automatic Number Identification (usually telephone number)

ALI – Automatic Location Identification

EMS DISPATCH

“In most 911 systems, there is a PSAP that is usually located in the Fire Department or Police Department dispatch center.”¹⁸ This center may or may

not dispatch EMS. Private ambulances may not be included in the 911-dispatch center.

EMD PROGRAMS – Emergency Medical Dispatch Programs

EMD's are considered physician extenders.

- “EMD's are the first EMS provider that the caller contacts and are trained in communication techniques “¹⁹ “In 1978, an article in JEMS, identified the medical dispatcher as the weakest link in the chain of EMS response.”^{20, 21} It is recommended that all personnel in EMS communication be EMD trained. This course is currently 24 hr long and it is a recommendation that the medical director should attend a course. It is recommended that the medical director “work with EMS administration to establish appropriate and medically sound practices and quality assurance programs for medical dispatch.” ^{22, 23}
- Priority Dispatch: Medical priority dispatch (MPD) provides the goal of “sending the right thing to the right person, at the right time, in the right way, and doing the right things for the patient until help arrives.”²⁴ The goal is to have EMS services enroute within one minute of receiving the call. It is a standard to provide the appropriate response, whether it is ALS or BLS, to the patient, to give the best medical care without over utilizing resources.
- Prearrival Instructions: These are instructions or protocols written by a medical director that provides instructions to the caller until EMS personnel arrive at the scene. “The National Association of EMS Physicians (NAESMP) and the American Heart Association have taken a clear position that prearrival instructions are in essential dispatcher practice.” ^{25, 26} Dispatch Life Support (DLS) is a system that provides prewritten scripts with yes/no logic that can be read to the caller to guide them in a systematic manner of providing care until EMS arrives the system may be protocol driven or may have on line medical direction. The medical director should be available at all times for further clarification or direction of care.

Functional Components of EMS Communications:

1. Operational: “Communication activities that relate to the operation of the system”²⁷ such as dispatch, or vehicle to vehicle
2. “Medical: interaction between field personnel and medical oversight.”²⁸

Components of EMS Communications

1. Radios:
 - a. Simplex: one way communication (one person talking at a time)
 - b. Duplex: Paired radio frequencies allowing for communication in both directions at the same time.
2. Radio frequencies:

- a. VHF (Very High Frequency) – low band (32 – 50 MHz) – longest range but poorest penetration.
 - b. VHF High Band (150 –174 MHz) – Commonly used in EMS systems. Good range, less interference but poor penetration.
 - c. UHF (Ultra High Frequency) (450-470 MHz/ Med Channel 1-10) Less range but good building penetration. Can transmit EKG's.
3. Telemetry: Transmission of information over radio waves such as pulse or 12 lead EKG
 4. Telephone:
 - a. Land lines or regular telephone
 - b. 'Wireless – although these are not effective with disaster communications.

Medical Oversight Communications

This concept will be discussed in depth in the next section. It is communication between EMS personnel in the field and medical oversight. It can be direct communication with medical control as in the on line module or off line (Indirect) as in protocol driven medical direction.

REGIONALIZATION OF CARE

There is a trend toward regionalization of medical care. Many hospitals are specializing in particular services (such as cardiac and stroke services) and not providing a full service hospital. This can cause confusion for patients and EMS Services and requires a triage system to identify the proper facility for the patient to be transported to.

As stated in NHTSA "Guide for Preparing Medical Directors", "The specialization of some receiving facilities provides special resources to the EMS System and potentially impacts how EMS personnel treat patients and the locations to which the patients are transported – it allows for the regionalization of health care resources."²⁹

1. PEDIATRICS: The care of children requires a specialized knowledge, in that their physiology and response to injury and illness is different than adults. In the past, there has been limited education and equipment for the pediatric patient in the EMS system. It has been cited that "10 % of transported patients and 25% to 35% of emergency department patients are less than 18 years old."^{30, 31} In 1984, the EMSC (Emergency Medical Services for Children) act established federal funding for the development of pediatric EMS education. In this state, that service is out of KBEMS (Kentucky Board of EMS) with the oversight by Dr Mary Fallat.

Additional reference for EMS for Children is covered in Principles of EMS Systems

2. TRAUMA CARE: Many states have an extensive trauma care system with regional areas coordinating appropriate care and transport of the injured patient. ATLS has long established the “Golden Hour” concept with emphasis on air transport of the critically injured patient to the appropriate trauma facility.

“EMS systems should establish criteria and protocols that address triage (bypass) decisions to identify those critically injured patients that should be taken directly to the trauma center.”³² The landmark paper “Accidental Death and Disability: The Neglected Disease in Modern Society” focused on the issue of having a comprehensive plan of treatment and prevention program in trauma care. Trauma remains a leading cause of death in children and adults under the age of 45.

Additional reference for Trauma Systems is covered in Principles of EMS Systems.

The two major Level I trauma centers in the state of Kentucky are the University of Louisville and the University of Kentucky.

3. CARDIAC CARE: American Heart Association has a major focus on the care and treatment of the acute cardiac event. This is another area that is described as the “Golden Hour” of time to cardiac cath lab or thrombolytics. Triage protocols should be implemented in the EMS system on taking the patient to the nearest hospital or if indicated the closed facility that can provide the full scope of cardiac care. In addition, there are programs that provide AED and public access and education to these devices. These programs are usually associated with EMS systems and subsequent medical oversight.

4. STROKE CARE: The American Heart Association has also identified stroke as another event in the “Golden Hour.” There are certain hospitals that provide the resources such as neuroradiology, neurology and the stroke team to provide quick access to the patient with acute onset of stroke symptoms. The EMS system is an integral part of this process and subsequent direction and medical oversight. This concept is especially pertinent for Kentucky, because we are in the middle of the stroke belt.

5. SPECIAL CONSIDERATIONS:

There are certain specialties that are provided by a select few hospitals
Hyperbaric Oxygen Chambers
Neonatal or High Risk Obstetrics
Decontamination facilities for Hazardous Materials Incidents
Burn Units
Psychiatric Units
Centers that provide reimplantation

Rehabilitation Centers
Spinal Cord facilities

6. AIR MEDICAL TRANSPORT: A specific set of criteria should be established to provide triage for patients that air medical transport is needed. The discussion of Air Medical Transport is beyond the scope of this module. For further reference the section on Specialty Transport (Chapter 11) in “Principles of EMS Systems” provides an in depth discussion of Air Medical Transport Systems.
7. RURAL EMS SERVICES: There are differences in Rural and Urban Systems that can result in different system designs. Some of the limiting factors discussed in literature are resources, which include personnel, response time due to geographical area and call volumes and funding. There is a comparison chart of the challenges facing Urban and Rural Providers in “Guide for Preparing Medical Directors” on page 26.

EMS FUNDING:

When the Emergency Medical Services Act was passed in 1976 and 1979, funding was available to help the states to development EMS systems. This federal funding was from the Department of Health, Education and Welfare and Department of Transportation.

In 1981, the Omnibus Budget Reconciliation Act brought to a halt grant programs for EMS with two exceptions of two block grants. “One of the block grants is the Preventative Health and Health Services Block Grant under Health and Human Services and The Department of Transportation National Highway Traffic Safety Administration “402 Funds.”³³

There are 4 primary revenue sources for EMS

1. Tax based
2. Fee For service billing
 - Medicare: under part B providers
 - Medicaid: Federally sponsored program but state administered
 - Private Insurance Companies
 - Private Pay
3. Subscription program revenues
4. Special Service contracts such as the “public utility model which is the patient is billed for the services rendered, and any difference between the bid contract and actual revenues is made up from subsidy by the community.”³⁴

As stated in the “Guide for Preparing Medical Directors”, Medical oversight funding is an important issue. The medical director should be compensated for their time and expertise.

On-line medical direction has a medicare billing code.
The charge for on-line medical direction can be billed to the prehospital provider and is included in the ambulance service fee or is an add-on charge to the ER bill.
Off-line medical direction may have a “franchise fee” that is incorporated into the ambulance bill.

There are still a few state and national grants available for EMS
Available resources are
Office of Highway Safety
EMSC programs and Maternal Child Health Bureau (HRSA)
Foundations
NHTSA

- ¹ William R. Roush, MD, Principles of EMS Systems, Second Edition, p12.
- ² William R. Roush, MD. Principles of EMS Systems, Second Edition, p14.
- ³ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 13-14.
- ⁴ William R. Roush, MD. Principles of EMS Systems, Second Edition, p105.
- ⁵ William R. Roush, MD. Principles of EMS Systems, Second Edition, p105.
- ⁶ Eisenberg MS, Hallstrom AP, Copass MK, et al: Treatment of ventricular fibrillation:
Emergency medical technician defibrillation and paramedic services. JAMA 1984;251:1723-1726
- ⁷ William R. Roush, MD. Principles of EMS Systems, Second Edition, p115.
- ⁸ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 16.
- ⁹ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 16.
- ¹⁰ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 17.
- ¹¹ William R. Roush, MD. Principles of EMS Systems, Second Edition, p115.

- ¹² William R. Roush, MD., Principles of EMS Systems, Second Edition, p 458.
- ¹³ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 17.
- ¹⁴ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 247.
- ¹⁵ Lumpe D: Calling 911” Who will answer? Emerg. Med News, April 1993.
- ¹⁶ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 254.
- ¹⁷ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 255.
- ¹⁸ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 18.
- ¹⁹ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 18.
- ²⁰ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 264.
- ²¹ Clawson J: Dispatch priority training---Strengthening the weak link. JEMS 1981;6(2):32-36.
- ²² William R. Roush, MD. Principles of EMS Systems, Second Edition, p 269.
- ²³ Clawson J: Dispatch priority training---Strengthening the weak link. JEMS 1981;6(2):32-36.
- ²⁴ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 264.
- ²⁵ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 275.
- ²⁶ Guidelines for cardiopulmonary resuscitation and emergency cardiac care. JAMA 1992; 268(16):2172-2173.
- ²⁷ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 18.
- ²⁸ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 18.
- ²⁹ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 20.

- ³⁰ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 52.
- ³¹ Seidel JS: EMS-C in urban and rural areas: The California experience. In Haller JA (ed):
Emergency Medical Services for Children. 97th Ross Conference on Pediatric Research.
Columbus, OH: Ross Laboratories, 1989.
- ³² National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 22.
- ³³ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 125-126.
- ³⁴ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 22.
-
- ¹ William R. Roush, MD, Principles of EMS Systems, Second Edition, p12.
- ² William R. Roush, MD. Principles of EMS Systems, Second Edition, p14.
- ³ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 13-14.
- ⁴ William R. Roush, MD. Principles of EMS Systems, Second Edition, p105.
- ⁵ William R. Roush, MD. Principles of EMS Systems, Second Edition, p105.
- ⁶ Eisenberg MS, Hallstrom AP, Copass MK, et al: Treatment of ventricular fibrillation:
Emergency medical technician defibrillation and paramedic services. JAMA 1984;251:1723-1726
- ⁷ William R. Roush, MD. Principles of EMS Systems, Second Edition, p115.
- ⁸ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 16.
- ⁹ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 16.
- ¹⁰ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 17.
- ¹¹ William R. Roush, MD. Principles of EMS Systems, Second Edition, p115.
- ¹² William R. Roush, MD., Principles of EMS Systems, Second Edition, p 458.

-
- ¹³ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 17.
- ¹⁴ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 247.
- ¹⁵ Lumpe D: Calling 911” Who will answer? Emerg. Med News, April 1993.
- ¹⁶ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 254.
- ¹⁷ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 255.
- ¹⁸ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 18.
- ¹⁹ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 18.
- ²⁰ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 264.
- ²¹ Clawson J: Dispatch priority training---Strengthening the weak link. JEMS 1981;6(2):32-36.
- ²² William R. Roush, MD. Principles of EMS Systems, Second Edition, p 269.
- ²³ Clawson J: Dispatch priority training---Strengthening the weak link. JEMS 1981;6(2):32-36.
- ²⁴ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 264.
- ²⁵ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 275.
- ²⁶ Guidelines for cardiopulmonary resuscitation and emergency cardiac care. JAMA 1992; 268(16):2172-2173.
- ²⁷ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 18.
- ²⁸ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 18.
- ²⁹ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 20.

³⁰ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 52.

³¹ Seidel JS: EMS-C in urban and rural areas: The California experience. In Haller JA (ed):
Emergency Medical Services for Children. 97th Ross Conference on Pediatric Research.
Columbus, OH: Ross Laboratories, 1989.

³² National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 22.

³³ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 125-126.

³⁴ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 22.

EMS SYSTEMS Answers

1. T OR F; A single tiered model is one agency provides a response and another agency transports.
2. Average response time for initial responders;
 - a. 2 minutes or less
 - b. 4 minutes or less
 - c. 6 minutes or less
 - d. none of the above
3. T OR F; Fractile response time is the percentage of time that response times meet guidelines.
4. T OR F; Acceptable fractile response time is 90%.
5. Average response time for ALS responders:
 - a. 10 minutes or less
 - b. 8 minutes or less
 - c. 5 minutes or less
 - d. none of the above
6. EMS in Pittsburgh, Pa. is part of the Public Safety Department. This is an example of what type of organization
 - A. private = for profit
 - B. community based not for profit
 - C. fire based
 - D. Third service
 - E. volunteer
 - F. hospital based
7. When a call comes into the dispatch center, it is routed through a computer based system which displays the phone number (Automatic Number Identification -ANT) and location (Autonomic Location Identification — ALI) of the phone from which the call is being placed from. This is an example of?
 - a. Basic 911
 - b. Enhanced 911
 - c. Caller ID
 - d. None of the above
8. Direct communication or medical direction is provided by designated resources regardless of the receiving facility. This type of medical control is designated
 - a. On-Line Medical Control

b. Off-Line Medical Control

9. Priority Dispatch includes;

- a. Protocol driven prearrival dispatch instructions
- b. Allows the dispatcher to provide the caller with instruction on how to begin care to the patient prior to EMS arrival
- c. Appropriate type and level of service in an appropriate manner (lights and sirens or not) for the type of event.
- d. All of the above
- e. None of the above

10. T or F; Medicare has a billing code for On-Line Medical control?

EMS SYSTEMS Answers

1. T OR F; A single tiered model is one agency provides a response and another agency transports.

Answer: False.

NHTSA; p.15.III.C.

PEMS p 166, under section EMS transport

“The response may be either single- or multi-tiered. In single-tiered response systems, all vehicles and personnel are capable of delivering essentially the same level of service. In multi-tiered systems, vehicles and personnel of various capabilities may respond to provide Advanced Life Support (ALS) or some lesser level of care according to a previously established system-wide dispatching plan.”

2. Response time averages for initial responders;

B

Answer: 4 min or less for BLS and 8 min or less for ALS

NHTSA document; p16, III. E.

PEMS p. 13; under section Master Plan

“Second, the plan needs to include specific goals and objectives that can be identified and measured. The resources need to be matched to the population to be served as well as the goals and objectives to be achieved. These goals should be specific to allow meaningful assessment of the system. For example, within the service area, can basic life support (BLS) be delivered within four minutes and ALS within eight minutes?”

3. T OR F; Fractile response time is the percentage of time that response times

meet guidelines.

Answer: True.

NHTSA document; p.16, III.E.4

4. T OR F; Acceptable fractile response time is 90%.

Answer: True

NHTSA document; p16, III.E.4

5. Response time averages for ALS

B.

PEMS p. 115; under Communications.

“For most urban EMS systems, an eight minute clock delineates an acceptable emergency response time and is a goal used in subsequent unit deployment plans. The standard of eight minutes has not been arbitrarily chosen: a Seattle study of cardiac arrest victims in coarse ventricular fibrillation

found that if BLS is initiated within eight minutes or less, the victim has a much greater chance of survival. Modern urban EMS system goals should expect providers to achieve this demanding eight-minute efficiency at least 90% of the time.”

Reference to Eisenberg MS, Hallstrom AP, Copass MK, et al: Treatment of ventricular fibrillation: Emergency medical technician defibrillation and paramedic services. JAMA 1984; 251: 1723-1726.

6. The type of organizations providing emergency care and transport are;
- A. private = for profit
 - B. community based = not for profit
 - C. fire based
 - d. Third service
 - E. volunteer
 - F. hospital based

EMS in Pittsburgh, Pa. is part of the Public Safety Department.

This is an example of what type of organization

Answer: D. Third Service

NHTSA; p14, II.B1

PEMS; p 109 – 110 under the section System Design

Third Service

“The third service type of EMS delivery system is housed in a specially formed municipal department (not fire or police) to provide ALS using city-owned, operated, and staffed ambulances. St Louis is one city using this model.

In many cases, third services are developed because of hesitancy by many fire or police departments to enter the EMS arena or to integrate existing private providers into the fire service. Manpower development usually is not a problem because communities are able to hire previously trained and certified personnel without developing a direct conflict with public safety, civil service, or unions. This design typically is managed by a public health department. The division then hires a professional manager to oversee the operation of the division. This position may fall under civil service, or it may be exempt. Typically, these managers have an EMS background and many have additional management training. Because the department’s goal is patient care, the manager’s attention, the prehospital personnel’s time, and the system’s budget do not have to be divided among other services such as fire suppression or law enforcement.”

7. When a call comes into the dispatch center, it is routed through a computer based system which displays the phone number (Automatic Number Identification -ANI) and location (Autonomic Location Identification – ALI) of the phone from which the call is being placed from. This is an example of?

- a. Basic 911
- b. Enhanced 911

Answer: B. Enhanced 911

NHTSA; p17, IV.B.2

PEMS; p. 254

“Enhanced 911 (E911) is a new access technology. In such a system, when a call comes in to the communications center, a computer displays the caller’s telephone number and address. Obviously, this speeds up the transfer of information from the caller to the call-taker. These systems also help decrease the number of false calls and facilitate call-backs for more complete information. There are countless anecdotes about how E911 has saved lives because it makes it possible to dispatch emergency personnel even when the caller cannot provide complete information. E911 systems require a commitment by the telephone company to keep information up-to-date when people move or change telephone numbers.”

8. Direct communication or medical direction is provided by designated resources regardless of the receiving facility. This type of medical control is designated
- a. On-Line Medical Control
 - b. Off-Lined Medical Control
 - c. None of the above

Answer: A. On-Line Medical Control

NHTSA; p.20.IV.F.2.a

PEMS; p239 under On-Line Medical Direction

“On-line medical direction provides supervision of the prehospital provider by physicians using communication equipment such as radio, land line telephones or cellular telephones (see Chapter 14, “EMS communications”). On-line medical direction can provide effective medical accountability because the physician directly orders the out-of-hospital interventions to be provided and assumes responsibility for them.

Most on-line resources are located in the ED, and supervision is provided by emergency physicians who, by reason of their education and experience, are the most qualified to supervise prehospital providers. The equipment to provide on-line direction must be conveniently located in a central area of the ED so that

incoming calls will be recognized immediately and unnecessary delays in responding to request for direction can be avoided. Unreasonable delays may cause prehospital providers to question the need for involvement in the EMS system by a noninterested or noncommitted institution or physician”

Chapter 14; p 256 Communications With Medical Direction

Systems must make it possible for field EMS personnel to communicate with receiving medical facilities and medical direction by radio, telephone, or cellular telephone. The extent to which EMS personnel require on-line medical direction remains unsettled. Currently, there is insufficient data to access the degree to which on-line physician interaction with EMS providers determines patient outcomes. Clearly, some EMS systems use on-line medical direction for all ALS interventions. Other systems use extensive standing orders, rarely requiring communication with a physician. Nevertheless, on-line medical direction should be available as a resource to field personnel at all times. When it is provided, an on-line physician who is intimately familiar with the EMS system must be immediately available and ultimately responsible for its delivery. Some EMS systems rely on physician surrogates, such as mobile intensive care nurses, to advise field personnel regarding appropriate protocol application. However, physician orders are required if deviation from protocols is indicated; the option to involve an emergency physician should always exist. On-line medical direction may be provided from the receiving facility or from a central location, which will determine the needs of the communication system. Clearly, each arrangement has advantages and disadvantages in terms of consistency of direction, quality improvement-directed feedback, and preparedness of receiving institutions.

9. Priority Dispatch includes;

- a. Protocol driven prearrival dispatch instructions
- b. Allows the dispatcher to provide the caller with instruction on how to begin care to the patient prior to EMS arrival
- c. Appropriate type and level of service in an appropriate manner (lights and sirens or not) for the type of event.
- d. All of the above
- e. None of the above

Answer: D. All of the above

NHTSA; p18.IV.C.3.b and c.

PEMS; p.264

Because the dispatcher is often the least medically trained professional in the EMS chain or survival, the process of MPD (Medical Priority Dispatching) accomplishes its goals through the EMD's (Emergency Medical Dispatcher's) careful use of a comprehensive protocol that contains:

A caller interrogation process that is systematized and formal
Systematized and scripted prearrival instructions

Protocols that match the dispatcher's evaluation of the injury or illness type and

severity with the vehicles response mode and personnel configuration
Support and definitive information for both on-line and off-line reference.

p. 276 Dispatch Life Support section

Dispatch life support (DLS) is provided by scripts that the EMD, through a yes/no logic branch, reads to the caller.⁵ This ensures consistency in treatment and encourages dispatcher intervention by reducing anxiety and developing learned phrasing.

DLS is defined as the knowledge, procedures and skills used by trained EMD's in providing care through prearrival instructions to callers.⁶ It consists of BLS and ALS principles that are appropriate to application by medical dispatchers. Because of the nonvisual nature of the provision of prearrival instructions and the need to rapidly teach the caller fairly intricate procedures in real-time (without practice tries or visual verifications), succinct, written BLS-like protocols must be available for and strictly follow by dispatchers.

10. T or F; Medicare has a billing code for On-Line Medical control?

Answer: True.

NHTSA; p.25.X.E.

PEMS; not direct reference to the Medicare billing, but reference on how medical control is financed. It is under the section Financing Medical Quality Control on page 472.

Securing adequate funding to allow independent, expert, and fully informed medical quality control is often a problem for many EMS systems. It need not be. EMS ordinances adopted by several local governments (including some having zero subsidy for their EMS programs) require, as a condition of licensure, monthly payment of per-transport "franchise fees" to a specially structured board of emergency physicians empowered by the same ordinance to oversee and regulate objectively all aspects of medical quality control. The funds thus collected are used then by the medical control board to retain the services of qualified medical director and staff, to fund office space and overhead, and, some cases, to finance research.⁷

Where adequate market size allows reasonable economies of scale, a franchise or license fee of \$3-\$5 per transport (emergency and nonemergency) is sufficient to support expert, objective, independent, and fully informed medical quality control. Where market size is inadequate, the best solution is not to increase the franchise fee amount but to work toward regional consolidation of the EMS system. An EMS provider already plagued by poor economies of scale is least able to afford the added burden of excessive quality control costs.

MEDICAL OVERSIGHT

Written by Sandra Archibald
Edited by Irwin Smith

With the emergence of Emergency Medicine as a specialty in the 1970's, the concept of medical accountability of the prehospital provider and the provision of Medical Director evolved.

This module will cover the objectives in Module III: Medical Oversight in the Guide For Preparing Medical Directors with references to said module and ACEP's Principles of EMS systems and Kentucky Regulations.

The minimum requirements for a medical director in the state of Kentucky are:

202 KAR 7:801 Medical directors

RELATES TO: KRS 311A.025, 311A.055, 311A.125, 311A.130, 311A.170, 311A.175

STATUTORY AUTHORITY KRS 311A.020, 311A.025, 311A.030, 311A. 180
NECESSITY, FUNCTION, AND CONFORMITY KRS 311A. 025 requires the board to promulgate administrative regulations relating to EMS medical directors. This administrative regulation establishes requirements for EMS medical directors

Section 1 EMS Medical Director Requirements (1) EMS medical directors shall

- (a) Hold a current, unrestricted license to practice medicine in Kentucky, and
- (b) Have knowledge of EMS laws and administrative regulations in Kentucky.

(2) Medical directors for an ALS provider shall meet the requirements of subsection (1) of this section, and either:

-
- (a) Be board-certified in emergency medicine by the American Board of Medical Specialties or the American Association of Physician Specialists, or
 - (b) Hold current provider certification in
 - 1 ATLS,
 - 2 ACLS, through either the AHA or the ASHI, and
 - 3 Pediatric ALS or PEPP
- (3) Medical directors for a BLS provider shall meet the requirements of subsection (1) of this section, and either
- (a) Be board-certified in emergency medicine by the American Board of Medical Specialties or the American Association of Physician Specialists, or
 - (b) Hold current provider certification in
 - 1 ATLS, BTLS, or Prehospital Trauma Life Support,
 - 2 ACLS, through either the ABA or the ASHI; and
 - 3 Pediatric ALS or PEPP
- (4) A physician applying to become a medical director may request a waiver for up to twelve (12) months from the date the physician is approved by the board to acquire the certifications as required in subsection (2)(b) or (3) of this section
- (5) A physician operating under a one (1) year waiver may request an additional one (1) year extension at which time the KBEMS office shall assign a staff member to work with the EMS medical director to locate any training needed to obtain missing credentials or to work with the provider to find an alternate EMS medical director who meets the requirements of this administrative regulation.

Section 2. EMS Medical Director Responsibilities. EMS medical directors shall function under terms of employment or a contractual agreement that specifically address the responsibilities of the medical director and the employer or the contractor responsibilities for the following topics:

- (1) Establishing medical protocols and standing orders for communications and patient care personnel;
- (2) Serving as a liaison with the local medical community;
- (3) Interacting with regional, state, and local EMS authorities on issues relating to EMS standards, needs and requirements and the optimization of resource utilization;
- (4) Maintaining continuing education appropriate for the EMS medical director, administrative staff, communication and patient care personnel;
- (5) *Restricting* or limiting patient care functions of staff
- (6) Establishing patient destination policies;
- (7) Establishing initial qualification of personnel involved in patient care and dispatch; and
- (8) Developing, implementing, and maintaining a quality improvement program for continuous system and patient care improvement.

Section 3. The board may revoke the authorization for a physician to serve as an EMS medical director. (30Ky.R. 176; Am. 945; eff. 11-19-2003.)

There was a period of time when it was considered that the prehospital providers preformed autonomously, without supervision by a medical director. This concept was secondary to lack of responsibility by medical directors and poor planning and implementation of EMS systems. It would not have been uncommon for a prehospital provider to walk by his medical director without recognition. Prehospital providers were not intentionally giving inappropriate care; there was a lack of education and retraining to provide the feedback to change medical care.

To provide adequate medical control, the medical director should have a working knowledge of prehospital patient care issues and the intricate workings of the EMS system. Medical Directors should be active participants in their EMS systems.

Medical control can be a single physician, a group or panel of doctors or a hospital based group of doctors (such as in a university setting). It is the responsibility of medical control to assume responsibility of the medical care provided.

The medical director “supervises the actions of the prehospital provider and designates and monitors physicians and facilities that participate in the system, such as on-line medical direction, data collection and compliance with system guidelines for the disposition of patients with specific problems. They are responsible for the development, implementation and monitoring of all system standards related to patient care. They are the contact person for interaction among the agency, medical community, EMS providers and patients.”ⁱ

“The medical director is willing to accept responsibility for the medical interventions provided by individual prehospital providers under the legal concept of delegated authority, known as respondent superior.”ⁱ

“ To perform this function, the physician must have defined authority to: approve participation by prehospital providers who practice under their license; suspend an EMS provider from medical care for due cause; establish system-wide treatment protocols; establish criteria for level of initial emergency response; establish criteria for determining patient destination; establish medical dispatch standards; approve on-line physicians; establish circumstances under which non-response or non-transport might occur; establish the level of approved educational proficiency of EMS personnel and conduct effective system audits and quality assurance.”ⁱ

There are three types of Medical Oversight:

-
1. Prospective: Development of procedures and protocol prior to patient encounter requires training, testing, education and QA Cited as off- line and indirect medical control
 2. Concurrent or Immediate: Direct orders in the field and occur at patient encounter. Standing orders if unable to contact medical control in a timely fashion. There may in field observation cited as On-line/ On-scene and Direct Medical Control
 3. Retrospective: There is ongoing review of run reports and this type of medical direction is following the patient encounter. QA is per EMS training if deficiencies noted in system. Cited as Off-line or Indirect Medical Direction

Off –line (Indirect) Medical Director:

Provides medical oversight and has responsibility and overall management for the EMS system operations as it relates to patient care issues

Types:

- a. Prospective
- b. Retrospective.

The medical director “must understand the political interactions and dynamics that affect EMS systems and be able to work in concert with EMS administrative director.”ⁱ

Responsibilities:

- ◆ Protocol development and revision, with standing orders
- ◆ Oversight of initial education of EMS personnel
- ◆ Oversight of continuing education of EMS personnel
- ◆ Quality improvement / quality assurance
- ◆ May also involve data collection and statistical analysis

On-Line Medical Direction (Direct)

Provides medical oversight with the prehospital provider by use of communication equipment via a radio or base station communication.

The prehospital provider may be speaking with a resident or attending physician (as seen in a University setting) or a specially trained nurse or paramedic that provide on-line medical direction per protocols with a physician readily accessible (as seen at Parkland in Dallas, TX or Chicago).

This model provides medical accountability secondary to the direct orders from the physician and can provide quality assurance with the ongoing evaluation and direction of medical director.

There is no indication that this provides improved patient care with standard, uncomplicated patient situations.

Types:

- a. Remote: radio, telephone or other form of communication
- b. On-Scene: By EMS Medical Director or EMS Physician
- c. On- Scene: Physician Intervener (Bystander Physician) – a physician who is not an EMS physician, who is present at the scene.

Physician Intervener (Bystander Physician)

A NonEMS physician may offer to intervene and assist EMS at the scene. There may be difficulties if they ask the EMS personnel to go outside their protocols.

There should be a policy in place to delineate whether to accept or decline assistance by the physician bystander.

ACEP policy on intervener physician (www.acep.org - policy statement; Direction of Prehospital Care at the Scene of Medical Emergencies) states that:

“A prehospital provider at an emergency scene should relinquish responsibility for patient management when the intervener physician has:

1. Been properly identified
2. Agreed to assume responsibility and
3. Agreed to document the intervention in a manner acceptable to the local emergency medical services system (EMSS)

When these conditions exist, the prehospital provider should defer to the wishes of the physician on the scene. If the treatment at the emergency scene differs from existing EMS protocols and is contradictory to quality patient care, the prehospital provider retains the right to revert to existing EMS protocols for the continued management of the patient: Prehospital providers shall not comply with orders which exceed their scope of practice. The intervener physician should agree in advance to accompany the patient to the hospital if required or needed. In the event of a mass casualty incident or disaster, however, patient care needs may require the intervener physician to remain at the scene.

If an intervener physician is present and on-line medical direction does exist: The on-line physician is ultimately responsible. If there is any disagreement between the intervener physician and the on-line physician, the prehospital provider should take orders from the on-line physician and place the intervener physician in contact with the on-line physician. The on-line physician has the option of managing the case entirely, working with the intervener physician, or

allowing the intervener physician to assume responsibility. In the event that the intervener physician assumes responsibility, all orders to the prehospital provider should be repeated over the radio for purposes of recording. The prehospital provider and on-line medical direction may re-establish on-line medical direction if either believes that the emergency care rendered by the intervener physician is contradictory to EMS protocols and quality patient care.”

If the intervener physician is compromising patient care and is interfering with EMS personnel treatment of the patient, law enforcement assistance can be requested to remove the individual from the scene.”ⁱ

Contractual Agreements should exist between EMS Medical Directors and the EMS agency. Items to be included, but not limited to are:

- Medical oversight authority and structure in system – roles and responsibilities
- Compensation
- Administrative and professional support
- Malpractice insurance coverage
- Occupation health responsibilities
- Equipment Provisionsⁱ

“An effective medical director must have the following attributes”

- Familiarity with the design and operation of prehospital EMS systems
- Experience or training in the prehospital emergency care of the acutely ill or injured patient (protocols)
- Experience or training in medical direction of prehospital personnel
- Ability to define the system data collection needs, participate in designing system audit procedures, and provide performance critiques for all prehospital providers (quality assurance process)
- Knowledge of administrative and legislative processes affecting regional or state EMS delivery
- Knowledge of EMS dispatch and communications (including response time, scene triage and transportation and diversion issues)
- Knowledge of local mass casualty and disaster plans,^{i, i}

PROTOCOLS:

Protocols should be written to deal with triage, treatment, transport, scene response time; communication and dispatch, critical care and transfer issues.

Forms of protocols are:

- a. Descriptive
- b. Algorithmic (similar to ACLS)

Treatment Protocols:

- a. Comprehensive or education: outlines each step in the evaluation and treatment based on patient complaint.
- b. Action protocol: Assumes that the EMS provider is able to collect the data and arrive at the appropriate impression and follows the treatment based on that conditions protocol
- c. Standing orders: executed based on the condition the EMS provider is able to determine the patient has and is implemented without on-line medical oversight. This type of protocol requires 100 % compliance and a QA/QI process is in place.ⁱ

Triage Protocols:

“Establishes transport of the patient based on condition, distance to receiving facility, and the capability of the receiving facility. It may allow conditions in which closer facilities can be bypassed to deliver the patient to a facility capable of definitive care for the perceived condition, such as trauma, stroke centers or cardiac centers.”ⁱ

“If the patient’s condition is not critical, the patient has a right to select a destination hospital. However, the system standards should explicitly define conditions in which this right is refused.”ⁱ

Dispatch Protocol:

Types:

- a. Priority
- b. Call screening

In some systems, the dispatcher may provide prearrival treatment based on training and protocol.

Priority dispatch is designed to send the appropriate level of care (BLS or ALS) to the patient to ensure the appropriate utilization of resources without compromising patient care.

Call Screening is discouraged. It entails a nonphysician making the decision in whether there is “no response” by the EMS system if it is felt there is no emergency.

Transport Protocol:

“Determines the medical capability of the EMS unit used to transport the patient based on the patient’s specific needs.”ⁱ

Communication Protocol/Policy:

“Includes the frequency allocation and designation of individuals that can use those frequencies in the EMS system.

The medical director must be able to designate on-line communication resources (hospital and physicians) that meet pre-established criteria to provide medical direction to prehospital providers.”ⁱ

No transport:

Protocol or policy should be defined and monitored for circumstances where EMS is dispatched and the patient is not transported.

“Failure or refusal by the prehospital provider to treat or transport a patient who request treatment or transport to an emergency facility is the single greatest medico legal risk in EMS systems and may represent 50% of litigation against EMS providers.”ⁱⁱⁱ

“If the prehospital provider makes a decision to not transport without specific orders from on-line medical direction (or as specifically outline in protocols), they may be perceived as practicing medicine without a license and could be charged with this offense. If anything untoward happens to the patient as a result of this independent decision, the actions of the EMT could be considered willful or wanton, which could mean that the EMT will face a law suit and may no longer be covered by protective legislation.”ⁱ

Dead Protocol;

Protocol or policy should be written to define conditions in which the prehospital provider is not to undertake resuscitative measures.

Air Medical Scene Response:

“A policy should identify how and when air transport is to be requested to the emergency scene and who has the authority to do so.”ⁱ

Physician on scene or Intervener physician:

Discussed under medical control. Policy should be in place in how to interact with physicians other than medical control, at the scene.

QUALITY MANAGEMENT

Quality management is the responsibility of the EMS Medical Director. It is method to assess your product (or care) and change management as needed through retraining, change in protocol or reassessment of the system.

Quality assurance was the early quality improvement tool in prehospital evaluation of patient care.

It focused on retrospective review in which the written EMS patient care form was reviewed.

“If a problem was discovered, a potential solution was developed and implemented, and the prehospital provider was contacted only if something was done wrong. As a result, the prehospital provider viewed the resolution of the problem as a punishment – not a positive educational experience.”ⁱ

“Quality improvement programs are based on different assumptions.”

- All prehospital providers want to do the best they can for every patient
- Given proper tools and training, EMS providers will provide high quality patient care.

This approach looks at the system first when evaluating a problem.ⁱ

JCAHO – Joint Commission on Accreditation of Healthcare Organizations provides guidelines on quality improvement process in EMS systems.ⁱ

Continuous Quality Improvement (CQI) is a philosophy that believes that quality is not built into a product retrospectively. The six principles involved in CQI are as follows:

- Build quality in. (Constantly monitor the system)
- Positive reinforcement
- Examine the system first
- Define expectations (as delineated in protocols)
- Expect but limit variation
- Strive for Knowledgeⁱ
-

Understanding the general principles and methodology of quality management programs include:ⁱ

1. Process and Outcome Measure of prehospital care which include
 - Scene Times
 - Procedure Completion Rates
 - Mortality Reviews
 - Trauma and cardiac arrest survival
 - Patient safety and medical error reduction
2. Evaluation Methods
 - Concurrent quality control - real time ongoing reviews
 - Retrospective quality control: least desirable – chart or run review

-
- Prospective quality control: Occurs before patient care is given. Implies that the prehospital provider is competent to provide care without the direct supervision of the Medical Director. “The prehospital provider is considered a borrowed servant of the medical director.”ⁱ
 - To be effective there must be involvement in the initial education of the prehospital provider, continuing education and skill evaluations with an effective preceptor program.ⁱ

Tape audits

3. Principles of Quality Management
4. Understanding of Pitfalls in QI:
 - Failure to close QI loop – information should be used to modify treatment protocols and educational activities.
 - Focusing on the individual instead of the system

Using these tools in Quality Improvement, the medical director should be able to identify and address problems, develop a plan or remediation program to correct any problems, enact the plan and reevaluate after the process has been implemented.

The QI Loop should be a continuous process similar to ACLS where you identify a problem, invoke a treatment, reassess the treatment and change management based on reassessment.

CRITICAL CARE ISSUES

Patient care should be the same regardless if it is in the prehospital setting or the emergency department. The prehospital provider is the “borrowed servant” of the Medical Director and provides care in the manner that is consistent with the care that would be provided if the patient were in the emergency room. The Medical Director is the patient advocate.

Differences in patient care and assessment techniques may be:

1. Airway Management issues
 - Intubation or ventilation of the entrapped patient
 - Intubation or ventilation of the patient in awkward positions
 - Intubation in chaotic or noisy environments
 - Use of alternative airways such as Combitube, PTL, LMA’s or other adjuncts
2. IV access in moving vehiclesⁱ

Unfamiliar to the medical director may be

1. Spinal immobilization techniques
2. Extrication
3. Communication Equipment
4. Emergency vehicle driving techniquesⁱ

LEGAL CONSIDERATION

Please review the chapter with the summary on the current Kentucky Laws and how they relate to EMS.

1. EMTLA – Emergency Medical Transport and Labor Act:

This Act deals with regulations regarding interfacility transfers. It initially was

To prevent “patient dumping”

In order to transfer a patient, one must be able to:

- a. patient or family consent
- b. personal training level for the type of care the patient needs

2. Good Samaritan Laws;

Limit liability to certain health care providers for injuries caused to patients.

There are incidents of litigation toward prehospital providers and toward the EMS systems in regard to training, supervision and medical direction.

These issues were not as prevalent in the beginning of the EMS system in the 1970's, in which many services felt Good Samaritan Laws protected them, and many people were reluctant to litigate prehospital providers. Unfortunately, this attitude has changed.

3. Medical Malpractice and liability: with the changing malpractice issues, many

policies do not cover EMS medical direction activities.

If you as the medical director do not have this coverage you may need to obtain it.

Check with the EMS agency that you are affiliated with and you may be covered as an

Employee, require a special policy or add a malpractice rider to your current policy.

You should determine if this policy covers administrative coverage only or

allows you to ride and provide care with the prehospital providers.

4. Terms:

Negligence: “every individual act as a reasonable person with the same or similar training would act under the same or similar circumstances. It

must be proven that the defendant had a duty to provide patient care, which there was a breach of that duty to provide required standard of care and that injury or damage resulted to the patient as a result of failure to comply with standard of care. There must be injury to have legal cause for action.”ⁱ

“Vicarious Liability is also known as respondent superior. The master is responsible for the negligence or willful and wanton conduct of the servant within the scope and course of his or her employment. It is delegation of medical practice and applies to those who give direction and provide control over EMS personnel at a scene as well as the actions of the prehospital provider that is providing care at the scene.”^{i i}

“Active Negligence” has been brought against EMS systems for inadequate training or supervision, improper certification and failure to remove from duty under circumstances where system administrators knew or should have known an individual was not competent to provide emergency medical care.ⁱ

“Willful and Wanton “or “Gross Negligence” is a reckless disregard for safety and is similar to gross negligence and recklessness. Insurance policies do not cover this type of malpractice.

5. Special Medico-legal High Risk Situations:

(As cited in “Guide For Preparing Medical Directors” –NAEMSP and ACEP pages 33-34)

- a. Informed consent refusal for treatment and transport
- b.** Intervenor physicians or other licensed personnel at the scene
- c. Incompetent patients
- d.** DNR and termination of resuscitation
- e. Preservation of crime scene
- f. ALS to BLS care
- g. System overload/ diversion
- h. Transfer policies and interfacility transfers
- i. Assault/abuse/neglect situations
- j. Multiple patient triage
- k. Patient abandonment or abuse by EMS
- l. Minors
- m. Interaction with the media

ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 231.

-
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 231.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 14.
- ⁱ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 14.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 357.
- ⁱ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 30.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 232.
- ⁱ Polsky S, Krohmer J, Maningas P, et al: Guidelines for medical direction of prehospital EMS,
Ann Emerg Med 1993;22:742-744.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 233.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 235.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 235.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 236-237.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 237.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 237.
- ⁱ Ayers R J: Legal considerations in prehospital care. Emer Med Clin North Am 1993; 11:853-867
- ⁱ Soler J M, Montes MF, Egol AB, et al: The ten-year malpractice experience of a large urban EMS system.
Ann Emerg Med 1985;14:982-985.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 19.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 237.
- ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 292.

ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 292.

ⁱ Quality assessment and improvement. In Accreditation Manual for Hospitals, Oakbrook Terrace, IL:
Joint Commission on Accreditation of Healthcare Organizations, 1991.

ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 293-294.

ⁱ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 31-32.

ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 238.

ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 301.

ⁱ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 32-33.

ⁱ National Association of EMS Physicians. American College of Emergency Physicians. Guide for Preparing Medical Directors, p 33.

ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 349.

ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 349.

ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 364
appendix 29.

ⁱ William R. Roush, MD. Principles of EMS Systems, Second Edition, p 350.

:

MEDICAL OVERSIGHT Questions

1. T or F; All standard medical malpractice and liability policies cover EMS medical direction.
2. Responseat superior is;
 - a. Delegated of medical practice
 - b. EMTLA
 - c. Good Samaritan Law
3. Pitfalls in QI;
 - a. Failure to close QI loop
 - b. Focusing on the system
 - c. Focusing on the individual
 - d. a,c
 - e. a,b
 - f. none of the above
4. Physician or designee who provides medical direction with radio and base station communication
 - a. On — Line (Direct) Medical Director

-
- b. On scene Physician Intervenor
 - c. Off—Line (Indirect) Medical Director
 - d. none of the above
5. Physician with full medical oversight authority and responsibility for the EMS system operation
- a. On — Line (Direct) Medical Director
 - b. On scene Physician Intervenor
 - c. Off—Line (Indirect) Medical Director
 - d. none of the above
6. NonEMS physician who is present at the scene
- a. On — Line (Direct) Medical Director
 - b. On scene Physician Intervenor
 - c. Off—Line (Indirect) Medical Director
 - d. none of the above
7. The components of protocol, policy and procedure development and review are;
- a. Clinical care
 - b. Transportation
 - c. Scene Triage
 - d. Scene response time
 - e. Communication and dispatch
 - f. All of the above
 - g. None of the above
8. Components of Quality management involving scene time, mortality review , trauma and cardiac arrest survival are components of
- a. process and outcome measures
 - b. evaluation methods
9. Components of prehospital equipment that may be unfamiliar to the physician may include:
- a. spinal immobilization
 - b. alternative airway devices such as combitube
 - c. extrication
 - d. a,c
 - e. a.b
 - f. none of the above

MEDICAL OVERSIGHT Answers

1. 1 or F; All standard medical malpractice and liability policies cover EMS medical direction.

Answer: False.
NTSA; p.33.V.D.

2. Respondeat superior is;
- a. Delegated of medical practice
 - b. EMTLA
 - c. Good Samaritan Law

Answer: A. Delegation of medical practice
NTSA; p.33.V.C
PEMS; p.231.

Given proper authority, the medical director is in a unique position to approve nonphysician personnel (EMT's and paramedics) to function within the EMS prehospital system. By allowing the nonphysician to participate, the medical director attest that the individual is capable of providing appropriate medical care as defined in the system standards. The medical director also indicates a willingness to accept responsibility for the medical interventions provided by individual prehospital providers under the legal concepts of delegated authority, also known as respondeat superior.

P.349. Vicarious Liability

The civil law concept of "vicarious liability" is also known as respondeat superior. Under these concepts, the "master" is responsible for the negligence or willful and wanton conduct of the servant within the scope and course of his or her employment. This doctrine is typically applied in employment situations, but it also applies to those who are entitled to give direction and exert control over EMS personnel on the scene.

p.364; appendix. #29. Vicarious liability (respondeat superior) is when an employer is held liable for the negligence of his or her employees. Under this doctrine, the hospital may be sued for the ED physician's negligence actions. Also, a physician acting as medical director of an emergency squad may be held liable for the actions of paramedic operating under his or her license if it were found that he or she condoned an action that proved to be negligent.

3. Pitfalls in QI;
- a. Failure to close QI loop
 - b. Focusing on the system
 - c. Focusing on the individual
 - d. a,c
 - e. a,b
 - f. none of the above

Answer: D; a and c.
NTSA; p.32.TII.D.4

4. Physician or designee who provides medical direction with radio and base station communication

- a. On — Line (Direct) Medical Director
- b. On scene Physician Intervenor
- c. Off—Line (Indirect) Medical Director

5. Physician with full medical oversight authority and responsibility for the EMS system operation

- a. On — Line (Direct) Medical Director
- b. On scene Physician Intervenor
- c. Off—Line (Indirect) Medical Director

6. NonEMS physician who is present at the scene

- a. On — Line (Direct) Medical Director
- b. On scene Physician Intervenor
- c. Off—Line (Indirect) Medical Director

Answer. 4. A.; 5.C; 6.B.

NTSA; p. 29, I. C.1.a, b and 2.b, c.

7. The components of protocol, policy and procedure development and review are;

- a. Clinical care
- b. Transportation
- c. Scene Triage
- d. Scene response time
- e. Communication and dispatch
- f. All of the above
- g. None of the above

Answer: F. All of the above NTSA; p.30.TII.A.

8. Components of Quality management involving scene time, mortality review , trauma and cardiac arrest survival are components of

- a. process and outcome measures
- b. evaluation methods

Answer: A. Process and outcome measures
NTSA; p31 .III.D. 1.

9. Components of prehospital equipment that may be unfamiliar to the physician may include:
- a. spinal immobilization
 - b. alternative airway devices such as combitube
 - c. extrication
 - d. a,c
 - e. a.b
 - f. none of the above

Answer: D. a and c. NTSA; p13, IV.C.

PERSONNEL AND EDUCATION

Written by Ashlee Melendez

Edited by Sandra Archibald

Medical direction of EMT training programs is similar to medical direction of EMS systems: medical directors are fundamentally responsible for the quality of the product in both systems. Surprisingly, many medical directors do not have official job descriptions and contracts with the programs to which they supply medical direction. This is unacceptable.

In both EMS systems and training programs, there are often conflicts between the medical director and the organization. In both situations, institutional concerns should not be allowed to interfere with the quality of the product. It is imperative that instructions include not only didactic material but also the practical aspects necessary for good performance in the field. Training programs must have instructors who are trained to teach as well as practice.

Adult Learners

Most EMT students are adults and expect to be treated as such. They will tend to be more independent and less tolerate of being forced to learn “irrelevant” materials than are traditional students. They are unlikely to enjoy sitting through a two-hour lecture, but are highly motivated to learn the material.

The Course

If the medical director is directly responsible for the quality of the product (the EMT graduate), then the medical director needs to have a certain amount of control over all aspects of the program.

Curriculum

There are several groups and organizations that will have a significant impact on a training program. The most important of these is the Department of Transportation (DOT), which has established clinical and didactic requirements for the training program. These requirements are available from the DOT in the following publications:

www.nhtsa.dot.gov/people/injury/ems/nsc.htm

EMT-Paramedic: National Standard Curriculum –Course Guide 1998

EMT-Intermediate: National Standard Curriculum- Course Guide 1999

EMT- Ambulance (aka. Basic): National Standard Curriculum- Course Guide 1995

First Responder: National Standard Curriculum- Course Guide 1995

Emergency Vehicle Operators Course(Ambulance) – National Standard Curriculum – Course Guide 1995

The medical director should read and evaluate and even take all tests, including pop quizzes and the final examination. The rule of thumb is: if the director misses a question, the question should be re-evaluated. The medical director needs to know the basics of test methodology to adequately assess the students' progress.

The medical director is particularly responsible for practical testing. The medical director does not necessarily need to administer every practical examination personally but should remediate any student who is failing. The medical director must ultimately set the standards for passing and failing a course.

Testing serves four functions:

- It guides the instructor when modifying the course.
- It guides the student when studying.
- It assists employers in hiring.
- It protects the public by eliminating incompetent students.

The program should have written policy that allows the medical director the discretion to dismiss a student he or she believes is incompetent and should not be allowed to practice-provided, of course, that the dismissal can be justified educationally and legally.

Paramedic training programs are usually approved by a state agency and may also be accredited nationally by the Joint Review Committee for Educational Programs (also known as the CoAEMSP -Committee on Accreditation of Educational Programs for EMS professionals) for the EMT-Paramedic, an organization sponsored in part by ACEP.

Within each state there has been an attempt to provide some consistency of the educational requirements through an EMS office and its regulatory authority. The EMS regulatory body in the state of Kentucky is KBEMS.

Education must be an ongoing activity of every EMS system, both to maintain provider proficiency and to keep up with rapid advances in technology.

EMS education involves both pre-service training and continuing education. Continuing education might be provided in a formal setting, such as a national convention or a state society meeting, or in a less formal environment, such as an in-service educational activity or a more casual one-on-one exchange between professionals. The CECBEMS is a national organization that accredits CE programs for paramedics.

In the education of prehospital personnel, the goal of the educational program is to facilitate the students' development of cognitive and technical competence. These programs should provide a method to meet state licensure and recertification requirements at the state and National Registry level.

Categories of Learning Outcomes

- **Knowledge-** This is the cognitive area of learning in which a person manages and organizes facts and theories. It is commonly measured with a paper-and-pencil type of the test.
- **Skills-** These are learned and demonstrable behaviors in which the student learns how to perform a task. These skills are commonly measured by observation using a checklist of required steps.
- **Behavior-** This is the development of attitude, demeanor, and communication, involving such concepts as professionalism, scene management, radio skills, and charting. These behaviors are commonly measured through observations by supervisors or employer in the work environment.
- **Analysis-** This is the level of knowledge in which the student gathers together variables and analyzes them, then comes to a logical conclusion. Ability to analyze is commonly measured using questioning techniques such as rounding, oral examination, or other question-and-answer exchanges between the teacher and student.

Medical Involvement in Program Quality

Assurance of the quality of the products of an educational system must be done on a student-by-student basis to ensure that each is successful in achieving the goals for the program, the course, and the student. The EMS program medical director is often called upon to ensure competency of graduates of the system's educational system. This responsibility is particularly important if the program or class is of a fixed-time design. If the medical director is responsible for ensuring

the teaching and testing skills of the programs instructors, he or she must have a thorough understanding of the methods employed to measure achievement. The medical director is also expected to know the focus of any test-as well as its reliability-in measuring the knowledge, skills, behaviors, and analytical ability of the graduates. Internal QA/QI mechanisms must be developed and are essential to any educational programs. In EMS, the only national quality assurance system for educational outcomes has been provided through Committee on Allied Health Education and Accreditation (CAHEA) of the American Medical Association. CAHEA, in collaboration with the Joint Review Committee on Educational Programs for the EMT Paramedic (JRC EMT P – now known as CoAEMSP), provides accreditation services for paramedic programs.

The EMS Medical Director may delegate the granting or withdrawal of privileges to function in an EMS system. These privileges are separate from state licensure or certification.

The medical director is usually not responsible for occupational health issues of EMS personnel, but they should be knowledgeable in these areas and how they affect the functioning of the system.

There are unique stressors and occupational hazards as related to EMS.

1. Personal mental health and stress management
2. Substance abuse issues and how remediation/rehabilitation of the individual in relation to mental health and affect on patient care
3. Infectious disease exposure which can run the gamut of Hepatitis B, AIDS, meningitis, SARS to name a few. The Ryan White Act allows for EMS personnel to obtain blood from the patient if an exposure has occurred.
4. OSHA and Hazmat issues including Weapons of Mass Destruction
5. Shift work
6. Scene safety and transport safety including dealing with domestic violence, the violent patient and driver safety.
7. Increase risk of injury, including back injury

In Summary, the medical director must be aware of the factors that are involved in training of personnel and the daily stressors on personnel.

PERSONNEL AND EDUCATION Questions

1. Goal for education of pre-hospital personnel: ~
 - a. Requirements for the state licensure
 - b. Recertification requirements for the state
 - c. Recertification requirements for the National Registry
 - d. All of the above
 - e. None of the above
2. T or F; the EMS medical director is the physician responsible for occupational health issues.
3. The right to obtain blood from a patient after an infectious disease exposure is;
 - a. Emergency Medical Services System Act
 - b. Ryan White Act
 - c. The Highway Safety Act
 - d. JCAHO
4. The Medical Director is knowledgeable in which areas of function of the EMS agency?
 - a. personnel mental health issues
 - b. effect of stress on personal and professional life
 - c. stress management
 - d. all of the above
 - e. none of the above
5. T or F; EMS personnel privileges are delegated by local medical directors.
6. The Medical Director should be familiar with educational course requirements for;
 - a. EMD (Emergency Medical Dispatcher)
 - b. First Responder
 - c. EMT-B
 - d. EMT-I
 - e. EMT-P
 - f. All of the above
 - g. None of the above

PERSONNEL AND EDUCATION Answers

1. Goal for education of pre-hospital personnel:
 - a. Requirements for the state licensure
 - b. Recertification requirements for the state
 - C.** Recertification requirements for the National Registry
 - d. All of the above
 - e. None of the above

Answer: D. All of the above
NTSA; p.39.III.C

2. 1 or F; the EMS medical director is the physician responsible for occupational health issues.

Answer: False
NTSA; p.39.VI.B.

3. The right to obtain blood from a patient after an infectious disease exposure is;
 - a. Emergency Medical Services System Act
 - b. Ryan White Act
 - c. The Highway Safety Act
 - d. JCAHO

Answer: B. Ryan White Act NTSA; p.39.VI.B.3.

4. The Medical Director is knowledgeable in which areas of function of the EMS agency?
 - a. personnel mental health issues
 - b. effect of stress on personal and professional life

-
- c. stress management
 - d. all of the above
 - e. none of the above

Answer: D. All of the above NTSA; p.39.VI.B. 1

5. 1 or F; EMS personnel privileges are delegated by local medical directors.

Answer: True NTSA; p.39.HLD.

6. The Medical Director should be familiar with educational course requirements for;
- a. EMD (Emergency Medical Dispatcher)
 - b. First Responder
 - c. EMT-B
 - d. EMT-I
 - e. EMT-P
 - f. All of the above
 - g. None of the above

Answer: F. All of the above NTSA; p.17.1.

Module V
EMS Systems and Responsibilities

Written by Robert Pringle
Edited by Sandra Archibald
Ashlee Melendez

The word “disaster” can have many definitions, but in general it means any community or regional event that disrupts community functions and activities and threatens or causes concern for the lives, health, and property of the citizens.

An MCI is an incident that produces many casualties but does not necessarily involve a large geographical area or threaten the well being of a large number of citizens in the community. Disaster involves a wide geographical area and its citizens and it may or may not produce a lot of casualties.

The most common classification “natural” disasters such as floods, hurricanes, and tornados from “man-made” disasters such as building collapses, plane crashes, and train derailments. A “surgical” disaster is one in which the victims suffer mainly from mechanical trauma, burns, or gunshot wounds, and a “medical” disaster is one in which the victims suffer, for example, mainly from pulmonary injury or toxicologic insult.

An MCI and a disaster are not necessarily the same event.

The most useful disaster classification:

- Level I- A disaster in which local medical resources is adequate once the disaster plan has been initiated.
- Level II- A disaster in which the local medical resources will be overwhelmed and help will be required from adjacent jurisdictions.
- Level III- A disaster in which local and neighboring EMS jurisdictions will be overwhelmed and state or federal resources will be needed.

The response to a disaster can be divided chronologically into a sequence of events, during each of which certain activities take place. See Table 1

Figure 1/Chronological sequence of events in response to a disaster.

Activation Phase

Phase 1 Notification and initial response

Phase 2 Organization of command and scene assessment

Implementation Phase

Phase 3 Search and Rescue

Phase 4 Victim extrication, triage, stabilization, and transport

Phase 5 Definitive scene management

Recovery Phase

Phase 6 Scene withdrawal

Phase 7 Return to normal operations

Phase 8 Debriefing

EMS disaster plans must be realistic for a specific system and a specific jurisdiction. They should be simple, logical easily understood, and essentially, based on the daily operating procedures of that EMS system. The goal is to limit injury, loss of life and damage to the community.

Local Geography

Some sections of the U.S. are subject to specific natural disasters such as tornados, floods, earthquakes, and blizzards. Input from the area EMS physicians who have had experience with such events will be valuable in formulating disaster plans. Discussions with meteorologists, local historians, and

specific experts (U.S. Geological Survey, National Oceanographic and Atmosphere Agency, etc.) may be helpful in such planning. An area for special thought is certain events that are unlikely, but possible. That is, to what extent is it necessary to prepare for an event that has never occurred in the area or has not occurred in many decades? Probably the standard disaster response would be relied on in such cases, rather than a specific plan's being formulated. Other aspects of local geography that must be examined are specific features such as rivers, canyons, and flood plains, because they probably have bridges, roads, overpasses, and elevated highways. Under what circumstances might those vital structures be out of service, and how would that affect the EMS response plans. The loss of the San Francisco-Oakland Bay Bridge during the 1989 earthquake is a good example.

The People

Urban areas, with their high population density, present a number of problems when a disaster occurs. First is the potential for having a large number of casualties. Disaster plans need to address the possibility that multiple casualty collection points and treatment areas may need to be established, with easy access to and from the site. Quick attention to these topics is imperative in order to ensure adequate space for EMS activities and patient transport.

Urban areas, again because of their high population density, can be expected to have large numbers of bystanders at the scene. Historically, bystanders tend to jump in and "help" on their own. Both their numbers and their efforts must be controlled quickly, which usually is a police function. In some, instances, of course, bystanders actually may be a useful source of manpower, helping to carry equipment and stretchers. At the very least, their energies can be channeled into keeping other people away from the scene if police are not available. As a general rule, bystanders are more easily controlled if they are given a task to do, even a minor one.

Man Made Variables

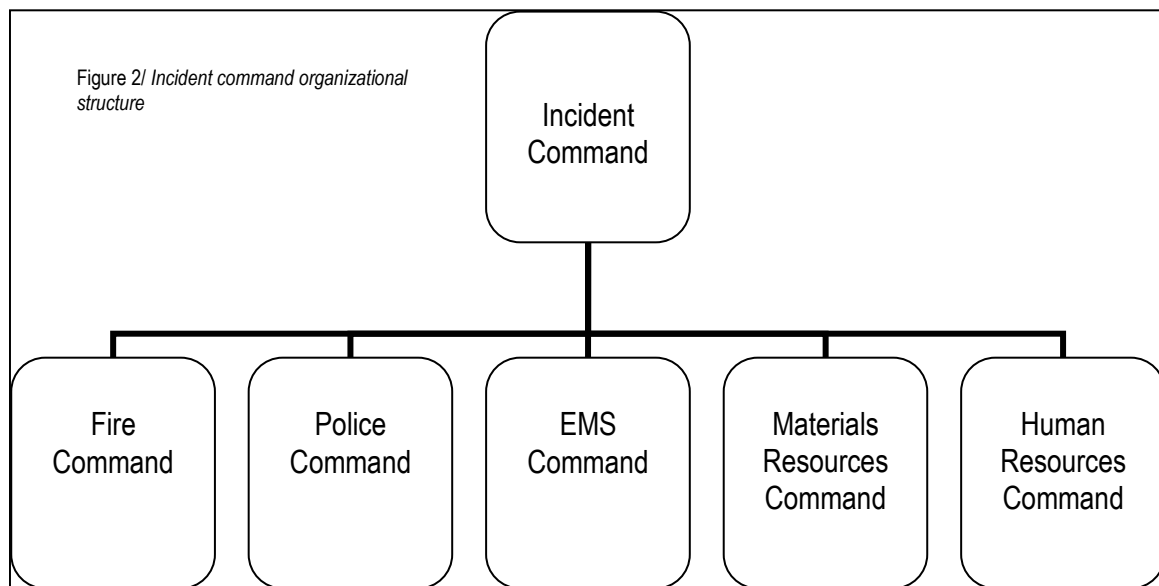
As mentioned earlier, roads, bridges and overpasses may be put out of commission during a disaster, which will complicate any EMS response. Those and many other man-made structures may be directly involved in the disaster, either as the site of a disaster or as a victim of it. Hotels, stadiums, and shopping centers, for example, are clusters of high-density populations with potential access and evacuation problems in the case of a disaster. The presence of special facilities in the response area, such as military bases (do they store fuel and munitions?) and nuclear power reactors will require coordination of their emergency plans with local EMS plans. Manufacturing plants using, storing or producing chemical are a threat, not only because they might be the cause of a disaster in the community, but also because they will contribute greatly to the severity of a disaster if they are damaged by, for example, a tornado or an

earthquake. Such plants need to conform to the Superfund Amendments and Reauthorization Act (SARA) of 1986 in anticipation of such occurrences. It is obvious that, by a systematic examination of the EMS response area, it will be possible to identify specific structures that may either produce a disaster or contribute to the problems of a disaster. Only with this information can a reasonable EMS disaster plan be developed for the area.

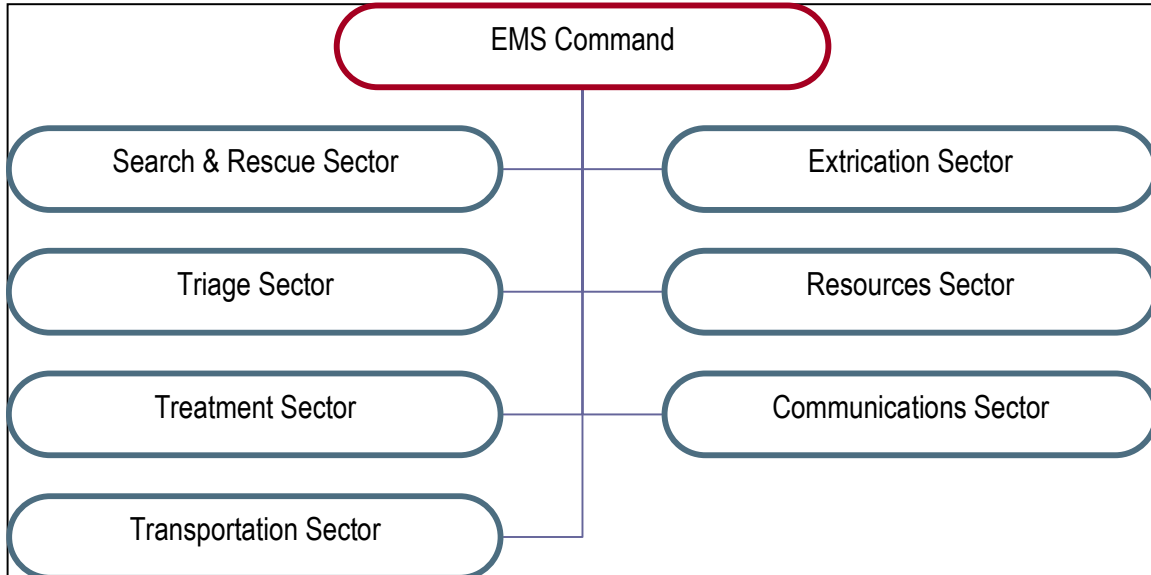
The Structure of the Disaster Plan

“Disaster Plan” in it’s entirety, is a huge document with all the relevant federal, state, and local agencies and resources. This document is the responsibility of the local government disaster leader or emergency planner. EMS medical director and emergency physician’s response plans of the EMS system and its delivery of medical care in the field and transport of patients to hospitals. EMS systems use the Incident Command System (ICS) as the base framework. ICS provides for an organizational structure that can be recognized by all responding emergency personnel and identifies a person in charge of each sector, as well as an Incident Commander, the overall person in charge.

The structure of the ICE is meant to be flexible so that it can fit the individual needs of the event.



Medical Commander is in overall charge of all medical/EMS activities at the scene and usually will be located at the Incident Command Post. Medical Commander usually is **not** a physician. Any physician, if at the scene would be much more useful in the treatment area (or field hospital). The most useful place for emergency physicians is in the ED.



Medical Field Card

In a Disaster, the most important activity for EMS is the patient care. The Physician involved in EMS has the most valuable input to the phase because of his or her knowledge of local EMS capabilities and those of the local hospitals.

The two components that are relatively known are the EMS system (personnel and equipment) and the area hospitals. The factor that is completely unknown is the disaster itself: what happens where, at what time of day and season, causing the importance of emphasizing flexibility in the plans and training exercises.

Reasons for contemplating field hospitals might be that the number of victims is so large that the local or regional hospitals cannot absorb them fast enough, that transportation is insufficient to transport them to those hospitals in a timely fashion, and that those hospitals are themselves incapacitated by the disaster (such as a flood, tornado, hurricane, or earthquake).

Patient Distribution

One of the most glaring errors in field medical care for victims of disaster has been poor distribution of the victims to area and regional hospitals.

An absolute requirement of the plan is a list of all hospitals that may be needed to receive disaster victims, along with their capabilities (number of beds specialty, medical staff make-up).

Communications

The biggest problem in any disaster has always been, and probably always will be, the inability to communicate.

Direct (dedicated) phone lines between EMS dispatch and area emergency departments are essential because the public lines to these facilities can be expected to stay busy.

A worst-case scenario would be that the EMS radio communication system, phone lines, and cellular phone systems all become dysfunctional. Thus, the inclusion of local ham radio clubs in the disaster system has obvious importance.

EMS field personnel must realize that, in many scenarios, using “runners” to carry written messages between sectors at the disaster scene may be as efficient as using radios.

A constant theme drilled into all EMS personnel training for disasters should be the judicious use of the radio.

EMS plans must be self-contained insofar as is possible, with no key component of the plans depending upon equipment from other agencies.

One of the first things that will happen to EMS during a disaster is the rapid depletion of basic equipment and supplies, such as bandages, splints, and IV sets, at the scene.

The EMS system should have sufficient basic equipment and supplies readily available for most foreseeable disasters.

The term: “special resources” refers to items such as cranes, bulldozers, and cutting torches that may be needed only in special circumstances and do not belong to the EMS system. Nothing is a resource until it is documented as to its location, how to obtain it, and who has the skills to use it.

Try to test all elements of a disaster plan at one-time guarantees that the disaster drill itself will become a disaster.

The EMS disaster planners can work small segments of disaster operations into daily EMS operations. For, example, they could mandate that any motor vehicle accident involving more than five victims require the set up of ICS protocol. Such practices serve as little built-in “mini-disaster drills”

The stress and disruptive nature of a disaster lead to great difficulty in keeping records and documenting patient identification and care. EMS planners must guard against trying to formulate documentation schemes so elaborate that they are bound to fail.

An absolute requirement in EMS of a disaster plan is to have a designated person to deal with representatives of these media, keeping in mind that those representatives can be best friends or worst enemies.

Summary

Every EMS jurisdiction must plan for disaster, because no populated area is ever free from such a threat. These plans must be tailored to the response area, taking into consideration the unique geographical and demographic characteristics, likely disaster scenarios and the capabilities of the local EMS system.

Disaster plans must be carefully formulated for the optimal use of available resources.

Several aspects of an EMS disaster plan are mandatory:

- The plan must be simple and based on the daily operations of the EMS system.
- The personnel of the “first in” EMS unit must know how to size up the scene and set up operations.
- All supervisory personnel on all shifts must be familiar with the disaster plan.
- The plan must be integrated and practiced with local fire and police departments.
- Parts of the plan should be tested in “mini drills” before the entire plan is tested.

Overall, everyone must understand that the key concepts for all involved are cooperation and flexibility, with the goal being to do the most good for the most people.

Prehospital

Many techniques used in the prehospital setting are not validated in context of the desired goal of medical intervention, which is an improvement in patient outcome.

As the specialty of prehospital emergency care develops, research is essential to providing direct improvement in patient care. Research provides the scientific basis of our practice and justifies its continued existence. Research initiates an evaluation of the costs and benefits of new and emerging technologies. Inspires “intellectual honesty” by requiring an ongoing evaluation of current approaches and techniques. Research generates new questions that can broaden the scope of practice necessary for any medical specialty to achieve recognition from peers in other medical disciplines.

The prehospital environment is not ideally suited for performing the same quality of scientific research that can be done in a hospital or laboratory.

Every EMS program should critically evaluate various components of the care provided within its system.

There are two primary categories: observational and interventional.

Observational study, information is collected and analyzed about the episode or event but no effort is made to influence the process or change the outcome.

The primary limitation of the observational study is its limited ability to define a cause and effect relationship between the process and outcome. Observational studies are valuable as a first attempt to define problems and issues for further study

Interventional study, the researcher influences the process or intervenes and then analyzes the effect by studying the outcome.

Interventional studies usually follow patients longitudinally. Appropriate to enroll in the study can either be identified retrospectively or prospectively (based on circumstances likely to require the intervention or lead to the outcome under study).

Components of a Research Project

- Identify problem or question to be explored
- Formulate a hypothesis
- Perform a literature search
- Design the study
- Perform the study
- Analyze the data
- Access the results
- Write the study for publication

The first component is a series of observations, questions, or problems that suggest an idea for study.

The next component is the formulation of the hypothesis. The hypothesis is a statement to be proved or disproved and should be stated as precisely as possible to facilitate the further design of the study.

A thorough literature review should be conducted to determine whether the proposed study has been investigated previously.

Retrospective Studies. Retrospective studies use previously collected data such as existing medical records to correlate clinical outcome with observations and intervention. The major advantage of retrospective studies is that they are relatively inexpensive, quick and easy to accomplish because the data have already been collected and are available for immediate analysis.

The major disadvantage of a retrospective study is that its conclusions must be tempered with the realization that patient outcome could have been influenced by factors other than those under study.

Consequently, the major impact of retrospective studies in assessing the clinical result of interventions is to identify areas that require closer investigation.

Prospective Studies. Prospective studies are more difficult to perform, but their conclusions are stronger. Patients are identified according to predetermined criteria and then are followed through the duration of their illnesses or until predetermined end points.

The prospective study is more powerful than simple observation because it can study therapeutic interventions in a consistent manner.

Study planning

While planning the study, researchers should consider the potential number of patients required to reach a definitive conclusion or achieve statistical significance.

In general, most medical studies require that the likelihood of the differences being due to chance alone be less than 1 in 20 ($p < 0.05$) before concluding that the difference is “real” or statistically significant.

At all phases of the study, personnel must be instructed and supervised carefully so that assessments are performed, treatments rendered and data collected uniformly.

The data collectors should be few in number and not participate in direct patient care.

Persons who are not involved in direct patient care to ensure impartial opinions should analyze data.

Assessment of Results. After completion of the study, the results should be assessed. This requires placing them in perspective with previous knowledge, assessing their clinical importance, and determining the limitations of the conclusions.

Some studies require on going data analysis to determine if the results are of such magnitude as to no longer be able to ethically withhold superior treatment or if the likelihood of obtaining a significant result is becoming small.

The final component of a research project is submitting the study for publication. Writing the results of research for publication is an art in itself, and it is impossible to give more than a brief introduction to the topic here.

These are no firm guidelines regarding to which publication a manuscript should be submitted, but it usually should be sent to the journal that best addresses the target audience of the conclusions.

If your manuscript is rejected, review the comments from reviewers carefully because they can be of immense help during the next revision. The key is perseverance. Almost all clinical studies can be published if written and submitted to the "right" journal.

Issues Unique to Prehospital Care Research

Most important, research projects must not interfere with patient care.

Prehospital providers are trained to limit the total time that they care for patients in the field, but properly conducted research frequently has the potential to extend this time and delay transport to the hospital.

The validity of results obtained is only as good as the quality of data acquisition. Many prehospital studies fail to meet rigorous standards of quality control.

Prospectively randomized double blind studies are the most scientifically sound, but these frequently are difficult to conduct in the field.

Caution must be observed when interpreting EMS studies. The time has come to prove the value of field care determining the most cost effective and medically sound treatments.

The dilemma is well stated in an editorial by Ronald D. Stewart, in which he states:

In short, our honeymoon is over, and it's time to use our initiative and innovative spirit to solve some of the problems we face. We need more than ever a vigorous effort directed toward the funding of clinical research. We have seen pass the golden days of EMS funding. If our methods and techniques are not changed to conform to what is medically needed, EMS as we know it will fast fade from medical scene.

EMS SYSTEM RESPONSIBILITY Questions

1. T or F; the ranking fire service officer has overall responsibility for incident command for a disaster/MCI.
2. Structured response to event defining lines of authority and responsibility are
 - a. Incident Command/Management System
 - b. Federal Emergency Management Agency (FEMA)
 - c. National Disaster Medical System (NDMS)
 - d. Disaster Medical Assistance Team (DMAT)
3. T or F; Disasters and MCI are the same event.
4. An event that overwhelms the ability of the local emergency response system
 - a. MCI — Mass Casualty Incident
 - b. Disaster
 - c. catastrophe
 - d. none of the above
5. An event that produces multiple casualties.
 - a. MCI — Mass Casualty Incident
 - b. Disaster
 - c. catastrophe
 - d. none of the above
6. T or F; Disasters, not MCI occur daily.
7. Goals of disaster preparedness are to limit impact

-
- a. on lives lost
 - b. injuries sustained
 - c. damage to the community
 - d. restoration of the community
 - e. all of the above
 - f. none of the above
8. True/False: Since obtaining consent may be troublesome, EMS researchers may seek a waiver of consent so that consent is not necessary for each research subject.
9. True/False: The volume of EMS research is quite high and of high quality.
10. True/False: EMS systems should play an active role in public health issues such as injury prevention and public education.

MODULE V
EMS SYSTEM RESPONSIBILITY

1. T or F; the ranking fire service officer has overall responsibility for incident command for a disaster/MCI.

Answer: True
NHTSA; p.41.I.C.

2. Structured response to event defining lines of authority and responsibility are
 - a. Incident Command/Management System
 - b. Federal Emergency Management Agency (FEMA)
 - c. National Disaster Medical System (NDMS)
 - d. Disaster Medical Assistance Team (DMAT)

Answer: A. Incident Command/Management System NHTSA; p.41.I.C.

3. T or F; Disasters and MCI are the same event.

Answer: False

NHTSA; p.41.I.B.

PEMS: p.204 under Definition of Disaster.

The origin of the word “disaster” is the Latin “astrum” or star, implying that a given calamity is due to a misalignment of the stars. The word “disaster” can have many definitions, but in general it means any community or regional event that disrupts community functions and activities and threatens or causes concern for the lives, health, and property of the citizens.

A distinction should be made between a disaster and a mass casualty incident (MCI). An MCI is an incident that produces many casualties but does not necessarily involve a large geographical area or threaten the wellbeing of a large number of citizens in the community. The word disaster implies the involvement of a wide geographical area and its citizens and it may or may not produce a lot of casualties. For example, the 1980 fire in the Las Vegas MGM Hotel was an MCI but was not a disaster, whereas Hurricane Hugo was a disaster but not an MCI because relatively few people were injured or killed. Of course, an event may be both a disaster and an MCI, as was the 1988 earthquake in Armenia.

4. An event that overwhelms the ability of the local emergency response system
 - a. MCI — Mass Casualty Incident
 - b. Disaster
 - c. catastrophe
 - d. none of the above

5. An event that produces multiple casualties.
 - a. MCI — Mass Casualty Incident
 - b. Disaster
 - c. catastrophe
 - d. none of the above

Answer: 4B; 5A.

NHTSA; p.41.LA and B

PEMS: p.201; see reference for 3, 4, and 6.

6. T or F; Disasters, not MCI occur daily.

Answer: False

NHTSA; p.41.I.B.

PEMS: p.204 sees reference in 3, 4, and 5.

7. Goals of disaster preparedness are to limit impact
 - a. on lives lost
 - b. injuries sustained

-
- c. damage to the community
 - d. restoration of the community
 - e. all of the above
 - f. none of the above

Answer: E. All of the above

NHTSA; p.41.I.D.I

PEMS; Chapter12 deals with Planning EMS Disaster response.
p.225.

“Overall, everyone must understand that the key concepts for all involved are cooperation and flexibility, with the goal being to do the most good for the most people.”

8. True/False: Since obtaining consent may be troublesome, EMS researchers may seek a waiver of consent so that consent is not necessary for each research subject.

Answer: True

References:

- Prehospital systems — page 295
 - The DHHS

9. True/False: The volume of EMS research is quite high and of high quality.

Answer: False

References:

- Prehospital systems — page 924
 - The volume of EMS research Medical direction — page 36
 - In the past...

10. True/False: EMS systems should play an active role in public health issues such as injury prevention and public education.

Answer: True

References:

- Prehospital systems — page 936
 - injury prevention... Medical direction — page 38

1. Boyd DR, Micik SH, Lambrew CT, et al: Medical control and accountability of emergency medical services (EMS) systems. *IEEE Trans Vehicular Tech* 1979; 28: 249 — 262.
2. Subcommittee on Medical Control, National Research Council: *Medical Control in Emergency Medical*

Services Systems. Washington, DC: National Academy Press, 1983.

3. **Boyd DR, Edlich RF, Micik SH (eds): *Systems Approach to Emergency Medical Care*.**

Norwalk, CT: Appleton — Century-Crofts, 1983.

4. **Eisenberg MS, Hallstrom AP, Copass MK, et al: Treatment of ventricular fibrillation: Emergency medical technician defibrillation and paramedic services. JAMA 1984; 251:1723-1726.**

5. **Clawson J, Jauert 5: Dispatch life support: Establishing standards that work. JEMSI 990; 1 5(8):82-88.**

6. **National Association of Emergency Medical Services Physicians: Emergency medical dispatching.**

Prehospital Disaster Medicine 1989; 4(2): 163-166.

7. **Stout JL: Organizing quality control in EMS. JEMS 1988; 1367-74.**

SUMMARY OF 202 KAR CHAPTER 6, BOARD OF EMERGENCY MEDICAL SERVICES

Summarized by Debbie Hendricks

A Kentucky Revised Statute (KRS) is a statute (law) that is passed by the General Assembly. The General Assembly statutorily authorizes Executive Branch agencies or governing boards (such as the KBEMS) that have specific subject matter knowledge to promulgate Kentucky Administrative Regulations (KARs) to establish more specific rules that carry the force of law to implement their programs. The following is a summary of 202 KAR Chapter 7, Board of Emergency Medical Services.

1. 202 KAR 7:010. Definitions for 202 KAR Chapter 7 - KRS 31 1A.030 requires the board to promulgate administrative regulations relating

to emergency medical services. This administrative regulation establishes the definitions used in 202 KAR Chapter 7.

2. 202 KAR 7:020, Board organization - KRS 311A.020 requires the board to establish procedures and processes for committees and subcommittees. This administrative regulation establishes the organization and committee structure of the board.

3. 202 KAR 7:030. Fees of the board - KRS 31 IA.1 45 authorizes the board to promulgate administrative regulations establishing a reasonable schedule of fees for examination, licensure, certification, inspections, applications, and other provided services and materials. This administrative regulation establishes those fees. -

4. 202 KAR 7:050. Requirements for examination, certification and recertification of the emergency medical technician-basic - KRS 311.6541(1) requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations relating to emergency medical technicians. This administrative regulation establishes requirements for examination, certification, and recertification of the basic level of emergency medical technicians, also known as 'EMT-B'.

5. 202 KAR 7:055. Advisory opinions - KRS 31 1A.040 authorizes the board to issue advisors' opinions. KRS 311A.040 requires the board to promulgate an administrative regulation for submission, consideration, and disposition of a request for an advisory opinion. This administrative regulation establishes those procedures.

6. 202 KAR 7:060. Emergency medical technician-basic course requirements - KRS

311.6541(1) requires the Board of Emergency Medical Services to promulgate administrative regulations relating to emergency medical technicians. This administrative regulation establishes requirements for the education and training of the emergency medical technician-basic, also known as "EMT-B".

7. 202 KAR 7:070. Emergency medical technician-basic instructors and EMT-B instructor trainers - KRS 311.6541(1) requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations relating to emergency medical technicians. This administrative regulation establishes the requirements for attaining certification as an emergency medical technician-basic, also known as EMT-B, instructor or appointment as an EMT-B instructor trainer.

8. 202 KAR 7:090. Disciplinary actions of emergency medical

technicians - KRS 311.6541(1) requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations relating to emergency medical technicians. KRS 311.6577 requires the Kentucky Board of Emergency Medical Services to investigate complaints against entities licensed by the board, to determine if a violation has occurred, and to prosecute and sanction regulated entities found to be in violation. This administrative regulation establishes grounds and procedures for taking disciplinary action against an applicant for EMT certification or a certified EMT.

9. 202 KAR 7:092. Emergency medical technician first responder training, examination, and certification - KRS 311.6541(1) requires the board to promulgate administrative regulations relating to emergency medical technicians. KRS 311.6524(10) requires the Kentucky Board of Emergency Medical Services to establish standards related to the training of emergency medical services personnel. This administrative regulation establishes the requirements for emergency medical technician first responder (EMT-FR) and EMT-FR instructor training, examination, and certification.

10. 202 KAR 7:094. Emergency medical services educational institutions and emergency medical services testing agencies - KRS 311.6541(1) requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations relating to emergency medical technicians. KRS 311.6524(10) requires the board to promulgate administrative regulations establishing standards related to the training of emergency medical services personnel. This administrative regulation establishes requirements for an organization to be approved by the board as an emergency medical services (EMS) educational institution or testing agency.

11. 202 KAR 7:100. Rules of practice and procedure for the board, committees of the board and subcommittees of the board - KRS 311.6523(4) requires the board to promulgate administrative regulations relating to quorum and rules of procedure for the board. This administrative regulation establishes quorum rules and rules of procedure for the board, its committees and subcommittees.

12. 202 KAR 7:102, Committees and subcommittees of the board - KRS 311.6523(7)(g) requires the board to establish committees and subcommittees. This administrative regulation establishes~ committees and subcommittees of the board.

13. 202 KAR 7:110. Referral of matters for criminal prosecution - KRS 311.6524 and

311.6541(1) require the board to promulgate administrative regulations relating to emergency medical services. This administrative regulation establishes requirements for referral, for criminal prosecution, of matters pertaining to EMT-FRs, EMTs, paramedics, ambulance services, and training institutions.

14. 202 KAR 7:140. Investigation and disposition of complaints - KRS 311.654(1) requires the board to promulgate administrative regulations relating to the issuance, renewal, suspension, denial, and revocation of licensure of paramedics. KRS 311.6541(1) requires the board to promulgate administrative regulations relating to issuance, renewal, suspension, denial and revocation of certificate of EMT5. KRS 311.6577 authorizes the board to investigate and discipline entities licensed by the board, paramedics, EMT-FRs, and EMTs. This administrative regulation establishes procedures with regard to the investigation and disposition of complaints.

15. 202 KAR 7:150. Procedures for disciplinary hearings - KRS 311.654(1) requires the board to promulgate administrative regulations relating to the issuance, renewal, suspension, denial, and revocation of licensure of paramedics. KRS 311.6541(1) requires the board to promulgate administrative regulations relating to issuance, renewal, suspension, denial, and revocation of certificate of EMTs. KRS 311.6577 authorizes the board to investigate and discipline entities licensed by the board, paramedics, EMT-FRs, and EMTs. This administrative regulation establishes the procedure for disciplinary hearings of those investigations and recommended discipline.

16. 202 KAR 7:160. Offenses - KRS 311.6524(1) and 311.654(1) require the board to promulgate administrative regulations relating to the issuance, renewal, suspension, denial and revocation of licensure of paramedics. KRS 311.6541(1) requires the board to promulgate administrative regulations relating to issuance, renewal, suspension, denial and revocation of certificate of EMTs. KRS 311.6577 authorizes the board to investigate and discipline entities licensed by the board, paramedics, EMT-FR5, and EMTs. This administrative regulation identifies offenses for which discipline may be given.

17. 202 KAR 7:201. First responders - KRS 311 A.020 requires the board to promulgate administrative regulations relating to first responders. KRS 31 1A.025 and 31 1A.160 require the board to establish standards relating to first responders. This administrative regulation provides standards for first responders.

18. 202 KAR 7:301. EMT - KRS 31 1A.025 requires the board to promulgate administrative regulations relating to EMTs. This

administrative regulation establishes requirements for EMTs.

19. 202 KAR 7:401. Paramedics - KRS 311 A.025 requires the board to promulgate administrative regulations relating to requirements and procedures for licensure, relicensure and reciprocity for paramedics. This administrative regulation establishes those requirements and procedures.

20. 202 KAR 7:405. Requirements to become a paramedic student - KRS 311 .654 authorizes the Board of Emergency Medical Services to establish requirements to become a paramedic student. This administrative regulation establishes the requirements to become a paramedic student.

21. 202 KAR 7:407. Paramedic training requirements - KRS 311.654 authorizes the Board of Emergency Medical Services to establish paramedic training requirements. This administrative regulation establishes paramedic training requirements.

22. 202 KAR 7:409. Educational institution - KAS 311.654 authorizes the Board of Emergency Medical Services to establish requirements for the training of paramedics. This administrative regulation establishes the requirements for an agency to train paramedics.

23. 202 KAR 7:413, Continuing education - KRS 311.654 requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations relating to paramedics. This administrative regulation establishes requirements for continuing education for paramedics.

24. 202 KAR 7:426. The paramedic license - KRS 311.654 authorizes the Kentucky Board of Emergency Medical Services to establish administrative regulations relating to the licensure of paramedics. This administrative regulation establishes the requirements for a paramedic to become licensed.

25. 202 KAR 7:433. Out-of-state paramedic not licensed in Kentucky - KRS 311 .654 authorizes the Board of Emergency Medical Services to promulgate administrative regulations relating to the issuance, renewal, suspension, denial, and revocation of licensure of paramedics. This administrative regulation establishes the procedures that an out-of-state paramedic may perform in Kentucky if the paramedic is not licensed in Kentucky.

26. 202 KAR 7:436. Procedure for licensing a paramedic who is licensed or certified in another state or territory under the jurisdiction of the United States or who is nationally registered -KRS 311.654 authorizes the Board of Emergency Medical Services to promulgate administrative

regulations relating to the licensure and practice of paramedics. This administrative regulation establishes procedures to enable paramedics licensed or certified in other states to apply for licensure in Kentucky.

27. 202 KAR 7:435. Supervision of out-of-state paramedic student - KRS 311.654 requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations relating to paramedics. This administrative regulation establishes requirements for the supervision of out-of-state paramedic students.

28. 202 KAR 7:465. Medical director for an advanced life support ambulance service - KFIS

311 .6523(7)(a) and 311.6524(1) require the board to regulate the practice and licensing of ambulance services. KRS 311 .6523(7)(o) and 311.6524(10) require the board to establish standards for the training of emergency medical services personnel. This administrative regulation establishes the training standards, requirements, and duties for the medical director of an advanced life support ambulance service.

29. 202 KAR 7:491. Establishes a fee schedule - KRS 311.656 authorizes the Board of Emergency Medical Services to establish a schedule of fees and charges for examinations, for the issuance of licenses, and for the renewal of licenses for paramedics. This administrative regulation establishes a fee schedule for examinations, for the issuance of licenses, and for the renewal of licenses for paramedics.

30. 202 KAR 7:493. Discontinuance of resuscitation by a paramedic - KRS 311.660 requires the

Kentucky Board of Emergency Medical Services to promulgate administrative regulations to establish a protocol governing the discontinuance of resuscitation efforts by a paramedic. This administrative regulation establishes a protocol for the discontinuance of resuscitation by a paramedic.

31. 202 KAR 7:495. Determination of death by a paramedic - KRS 311.660 requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations to establish a protocol for use by a paramedic in making a determination of death. This administrative regulation establishes a protocol for determination of death by paramedics.

32. 202 KAR 7:497. Training of paramedics in determination of death and preservation of evidence - KAS 311 .660 requires the Kentucky Board of Emergency Medical Services to promulgate an administrative regulation establishing the training requirements for a paramedic relating to determination of death and preservation of evidence. This administrative regulation establishes the training program requirements for a paramedic.

33. 202 KAR 7:501. Ambulance providers and medical first response agencies - KAS 31 1A.020 requires the board to exercise all administrative functions in the regulation of the EMS system and the licensing of ambulance services and medical first response agencies. KRS 31 1A.030 requires the board to promulgate administrative regulations for the licensing, inspection, and regulation of ambulance providers and medical first response agencies. This administrative regulation establishes minimum licensing requirements. -

34. 202 KAR 7:510. Air ambulance services - KRS 311 A.020 requires the board to exercise all administrative functions in the regulation of air ambulance services the EMS system and the licensing of air ambulance services. KAS 31 1A.030 requires the board to promulgate administrative regulations for the licensing, inspection, and regulation of this administrative regulation establishes minimum licensing requirements for air ambulance providers.

35. 202 KAR 7:520. Allocation of block grant funding assistance for emergency medical services - KRS 311 A. 115(3) authorizes the Kentucky Board of Emergency Medical Services to promulgate administrative regulations concerning the receiving and disposing of grant funds. KRS 31 1A.1 55 authorizes the Kentucky Board of Emergency Medical Services to maintain a block grant fund program for the purpose of assisting units of local government in the provision of emergency medical services. This administrative regulation establishes standards and criteria governing the allocation of funding assistance to eligible applicants.

36. 202 KAR 7:570. License procedures and fee schedule for ambulance providers - KRS 311.6523 requires the board to exercise all administrative functions of the state in the regulation of the emergency medical services system and the practice of ambulance services. KRS 311.6524 requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations for licensing, inspecting, and regulating ambulance providers. This administrative regulation establishes the requirements for obtaining and maintaining a license to operate an ambulance provider and establishes the fee schedule for a license.

37. 202 KAR 7:580. Class I ground ambulance providers - KRS 311.6523(7) requires the board to exercise all administrative functions of the state in the regulation of the emergency medical services system and the practice of ambulance services. KRS 311.6524(1) requires the Kentucky Board of Emergency Medical Services to promulgate administrative

regulations for the licensing, inspection, and regulation of ambulance providers. This administrative regulation establishes the minimum licensing requirements for Class I ground ambulance providers.

38. 202 KAR 7:582. Class II ground ambulance providers - KRS 311.6524(1) requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations for licensing, inspecting, and regulating ambulance providers. This administrative regulation establishes the minimum licensing requirements for Class II ground ambulance providers.

39. 202 KAR 7:584. Class III ground ambulance providers - KRS 311.6524(1) requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations for the licensing, inspection, and regulation of ambulance providers. This administrative regulation establishes the minimum licensing requirements for Class III ground ambulance providers.

40. 202 KAR 7:590. Air ambulance service providers - KRS 311.6523(7) requires the board to exercise all administrative functions of the state in regulation of the emergency medical services system and the practice of ambulance services. KRS 311.6524(1) requires the board to promulgate administrative regulations for the licensing, inspection, and regulation of ambulance providers. This administrative regulation establishes the licensure and operation requirements for air ambulance providers.

41. 202 KAR 7:595. Advanced life support (ALS) medical first-response providers - KRS 311.6524(1) requires the Kentucky Board of Emergency Medical Services to promulgate administrative regulations for the licensing, inspection, and regulation of medical first-response providers. This administrative regulation establishes for the minimum licensing requirements for ALS medical first-response providers.

42. 202 KAR 7:601. Training, education and continuing education - KRS 31 1A.1 10, 31 1A.1 15, 31 1A.120 and 31 1A.125 require the board to promulgate administrative regulations establishing standards related to the training and education of emergency medical services personnel. KRS 31 1A.130 relates to the provision of proper in-service and in-house in-service training. This administrative regulation establishes requirements for an organization to be approved by the board as an EMS-TEI and certification and recertification of EMS instructors.

43. 202 KAR 7:701. Scope of practice matters - KRS 31 1A.025, 31

1A.030, 31 1A.135, 31 1A.140, 31 1A.160, 31 1A.165, and 31 1A.170 require the board to promulgate administrative regulations relating to the scope of practice for individuals certified or licensed by the board. This administrative regulation establishes those scopes of practice.

44. 202 KAR 7:801. Medical directors - KAS 31 1A.025 requires the board to promulgate administrative regulations relating to EMS medical directors. This administrative regulation establishes requirements for EMS medical directors.

RESOURCES

Air and Transport Nurses Association

www.astna.org

Air Medical Journal (EMS Periodical)

www.elsevierhealth.com/scripts/om.dll/serve?action=searchDB&searchdbfor=home&id=mj

American Academy of Orthopaedic Surgeons

6300 N. River Road
Rosemont, IL 60018-4262
(708) 823-7186
www.aaos.org

American Ambulance Association
3800 Auburn Boulevard, Suite C
Sacramento, CA 95821
(916) 483-3827
www.the-aaa.org

American Association of EMS Physicians
P.O. Box 15945-281
Lenexa, KS 66285-5945
(913) 492-5858
(800) 228-3677
(913) 541-0156 – FAX
www.naemsp.org

American Burn Associates
Cleon W. Goodwin, MD, Secretary
New York Hospital-Cornell Medical Center
525 E. 68th Street, Room L-706
New York, NY 10021
(800) 548-2876
www.ameriburn.org

American College of Cardiology
9111 Old Georgetown Road
Bethesda, MD 20814-1699
(800) 253-4636
www.acc.org

American College of Emergency Physicians
1125 Executive Circle
P. O. Box 619911
Dallas, TX 75261-9911
(972) 550-0911
(800) 798-1822
(972) 550-2816 – FAX
www.acep.org

American College of Osteopathic Emergency Physicians
142 E. Ontario Street, Suite 218
Chicago, IL 60611
(312) 587-3709
www.acep.org

American College of Surgeons
55 E. Erie Street
Chicago, IL 60611-2797
(312) 664-4050
www.facs.org

American Heart Association
7272 Greenville Avenue
Dallas, TX 75231-4596
(214) 373-6300
www.americanheart.org

American Hospital Association
840 N. Lake Shore Drive
Chicago, IL 60611
(312) 280-6000
www.hoovers.com

American Red Cross
430 17th Street N.W.
Washington, DC 20006
(202) 737-8300
www.redcross.org

American Society for Quality
www.asq.org

American Society for Testing and Materials (ASTM) Committee F30 on
Emergency Medical Services
[www.astm.org/cgi-
in/SoftCart.exe/COMMIT/COMMITTEE/F#\).html?L+mystore+hduf0153+1042501
626](http://www.astm.org/cgi-in/SoftCart.exe/COMMIT/COMMITTEE/F#).html?L+mystore+hduf0153+1042501626)

American Trauma Society
8903 Presidential Parkway, Suite 512
Upper Marlboro, MD 20772-2656
(301) 420-4189
www.amtrauma.org

Associated Public-Safety Communications Officers, Inc.
2040 S. Ridgewood Avenue
South Daytona, FL 32119-8437
(904) 322-2500
www.apcointl.org

Association of Air Medical Service
35 S. Raymond Avenue, Suite 205
Pasadena, CA 91105
(818) 793-1232
www.aams

Baldrige National Quality Program
www.quality.nist.gov

Basic Trauma Life Support International (BLTS)
www.btls.org

Basic Trauma Life Support
P.O. Box 210727
Montgomery, AL 36121-0727
(205) 567-2000

Centers for Disease Control and Prevention
www.cdc.gov

Commission on Accreditation of Air Medical Services
P.O. Box 1305
Anderson, SC 29622
(803) 287-4177
www.camts.org

Commission on Accreditation of Ambulance Services
1926 Waukegan Road, Suite 1
Glenview, IL 60025-1770
(847) 657-6828
(847) 657-6819 – FAX
www.caas.org

Commission on Accreditation of Ambulance Services
P.O. Box 619911
Dallas, TX 75261-9911
(214) 580-2829
www.caas.org

Commission on Accreditation of Medical Transport Services
P.O. Box 1305
Anderson, SC 29622
(864) 287-4177
www.camts.org

Committee on Accreditation of Education Programs for EMS Professionals
CoAEMSP
1248 Harwood Road
Bedford, TX 76021-4244
(817) 283-9403
(817) 354-8519 – FAX
www.coaemsp.org

Congressional Fire Services Institute
900 Second Street, N.E. Suite 303
Washington, DC 20002
(202) 371-1277
www.csfi.org

Continuing Education Coordinating Board for EMS
Continuing Medical Education
CECBEMS
511 Mill Run Road
Dallas, TX 75244
(972) 387-2862
(972) 716-2007 – FAX
www.cecbems.com

Deming Electronic Network
www.deming.eng.clemson.edu/pub/den

Emergency Medical Foundation
P.O. Box 619911
Dallas, TX 75261-9911
(214) 550-0911
www.evacamb.org

EMS Best Practices (EMS Periodical)
www.emsbest.com

EMS-C National Resource Center
111 Michigan Avenue, NW
Washington, DC 20010

(202) 884-4927
(202) 884-6845 – FAX
www.ems-c.org

EMS-L (EMS Discussion Group)
www.listserv.unc.edu/cgi-bin/lyris.pl?join=ems

EMS Magazine (EMS Periodical)
www.emsmagazine.com

EMS News List (EMS Discussion Group)
PAULM@GWU.EDU – with “Subscribe-EMS News” in the subject line

EMS Quality Management Section at the Mobile Healthcare Forum
www.mhf.net/emscompass/quality

EMS Section at Firehouse.com (EMS Portal Website)
www.cms.firehouse.com/content/section/gen_section.jsp?sectionId=17

EMS Survey of the 50 States
www.emsmagazine.com/states/index.html

EMS Village (EMS Portal Website)
www.emsvillage.com

Emergency Nurses Association
216 Higgins Road
Park Ridge, IL 60068-5736
(708) 698-9400
www.ena.org

Federal Emergency Management Agency
www.fema.gov

Getting started with the Baldrige Criteria
www.quality.nist.gov/PDF_files/Getting_Started.pdf

International Association of Fire Chiefs
4025 Fair Ridge Drive
Fairfax, VA 22033-2865
(703) 273-0911
www.ifac.org

International Association of Fire Fighters

1750 New York Avenue, North West
Washington, DC 20006
(202) 737-8484
www.iff.org

JEMS (Journal of EMS)
www.jems.com

Joint Review Committee on Education Programs for the EMT-Paramedic
1701 W. Eules Boulevard, #200
Eules, TX 76040
(817) 283-2836

MERGINet (EMT Portal Website)
www.merginet.com

Mobile Healthcare Forum (EMT Portal Website)
www.mhf.net

National Academy of Emergency Dispatch
www.naemd.org

National Association of EMS Educators
www.naemse.org

National Association of EMS Physicians
2300 McKee Place, Suite 500
Pittsburgh, PA 15212
(412) 578-3222
www.naemsp.org

National Association of Emergency Medical Technicians
102 W. Leake Street
Clinton, MS 39056
(601) 924-7744
www.naemt.org

National Association of EMS Quality Professionals
www.naemsqp.org

NAEMSQP (EMS Discussion Group)
www.groups.yahoo.com/group/NAEMSQP

National Association of Public Utility Model EMS Systems
www.napum.org

National Association for Healthcare Quality
www.nahq.org

National Association for Search and Rescue
P.O. Box 3709
Fairfax, VA 22038
(703) 352-1349
www.nasar.org

National Association of State EMS Directors
1947 Camino Vida Roble, Suite 202
Carlsbad, CA 92008
(619) 431-7054
www.nasemsd.org

National Council of State EMS
Training Coordinators, Inc.
P.O. Box 11910
Iron Works Pike
Lexington, KY 40578-1910
(606) 231-1923
www.ncsemstc.org

National EMS Alliance
1947 Camino Vida Roble, Suite 202
Carlsbad, CA 92008
(619) 431-7054

NEMSMD – EMS Discussion Group
www.groups.yahoo.com/group/NEMSMD

National EMS Pilots Association, Inc.
35 S. Raymond Avenue, Suite 205
Pasadena, CA 91105
(818) 577-7600

National Emergency Medical Services for Children
Resource Alliance
REI/Harbor UCLA Medical Center
1124 W. Carson Street, Building N-7
Torrance, CA 90502
(310) 328-0720

National Flight Nurses Association

6900 Grove Road
Thorofare, NJ 08086
(609) 848-1000
www.astna.org

National Flight Paramedics Association
35 S. Raymond Avenue, Suite 205
Pasadena, CA 91105
(818) 405-9851
www.flightparamedic.org

National Highway Traffic Administration
EMS Division
400 Seventh Street, SW, NTS-14
Washington, DC 20590
(202) 366-5440
(202) 366-7721 – FAX
www.nhtsa.gov/people/injury/ems

NHTSA's EMS Agendas for the Future
www.nhtsa.gov/people/injury/ems/ems_agenda.html

NHTSA's EMS and Managed Care Document
www.nhtsa.dot.gov/people/injury/ems/emsbulletin

NHTSA's Guide for Preparing EMS Medical Directors
www.nhtsa.doc.gov/people/injury/ems/2001GuideMedical.pdf

NHTSA's Leadership Guide to Quality Improvement of EMS Systems
www.nhtsa.dot.gov/people/injury/ems/leadershipguide/index.html

NHTSA's National EMS Curricula
www.nhtsa.dot.gov/people/injury/ems/nsc.htm

National Registry of Emergency Medical Technicians
P.O. Box 29233
Columbus, OH 43229
(614) 888-4484
www.nremt.org

Occupational Safety Health Administration
www.osha.gov

Paramedicine.com
www.paramedicine.com

PreHospital and Disaster Medicine – Official Journal of the World Association for Disaster and Emergency Medicine and the Nordic Society for Disaster Medicine (EMS Periodical)
www.pdm.medicine.wisc.edu/home.html

PreHospital Emergency Care – Official Journal of NAEMSP, National Assn. of State EMS Directors
And the National Association of EMS Educators (EMS Periodical)
www.hanleyandbelfus.com/browse.asp?category=5&topic=69

PreHospital Perspectives (online only) – EMS Periodical
www.prehospital-perspective.com

PreHospital Trauma Life Support
National Office
200 Mill Hill Avenue
Bridgeport, CT 06610
(203) 384-3516
(800) 94-PHTLS
www.phtls.org

Professional Aeromedical Transport Association
28000 A-11 Airport Road
Punta Gorda, FL 33982
(818) 575-7710
www.atspec.org

Public Sector Continuous Improvement Site
www.deming.eng.clemson.edu/pub/psci/index.html

Society for Academic Emergency Medicine
901 N. Washington Avenue
Lansing, MI 48906
(517) 485-5484
www.saem.org

Society for Critical Care Medicine
8101 E. Kaiser Boulevard
Anaheim, CA 92808-2214
(714) 282-6000
www.sccm.org

State Baldrige Programs List
www.baldrige.com/STATE.HTM#Baldrige-Related_Awards

U.S. Fire Academy
16825 S. Seton Avenue
Emmitsburg, MD 21727
(301) 447-1000
www.fema.gov

Wilderness Medical Society
P.O. Box 2463
Indianapolis, IN 46206
(317) 631-1745
www.wms.org